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JULY 1987 • ISSUE 33

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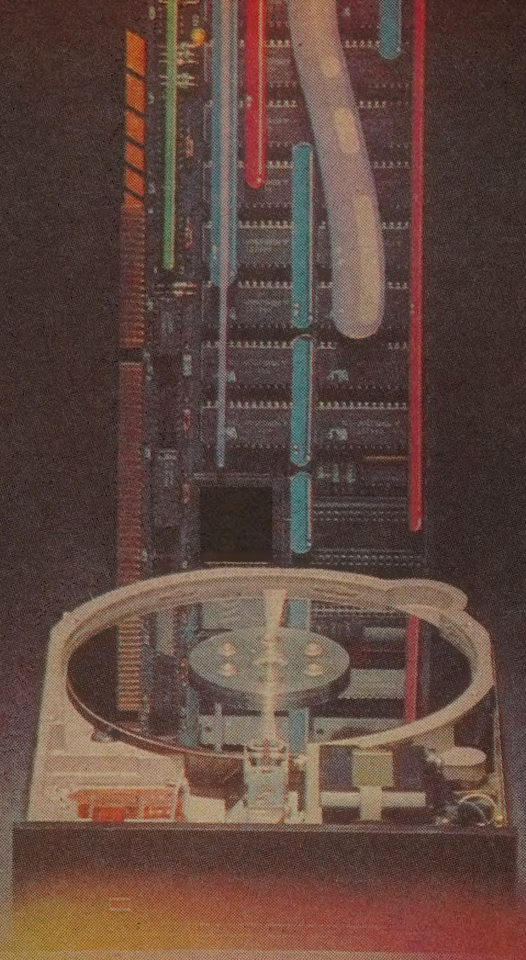

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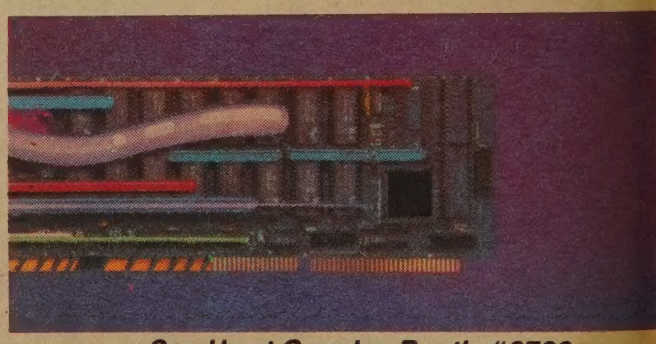

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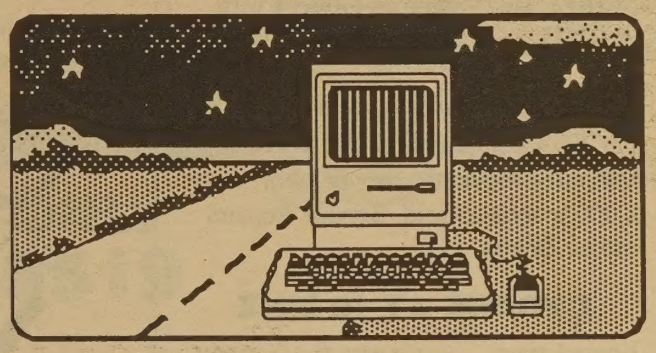

Plus lectures by the following Mac Personalities,

Steve Beck, *Beck-Tech*:
DTV: Desktop Television-The New Wave of Presentation Graphics
Noon

Chip Carman, *MacUser Magazine*:
Network Planning and Future Directions
One o'clock

Dave Winer, *Living Videotext*:
Future Directions in Mac Software
Two o'clock

Pradeep Singh, *Microsoft*:
Building Financial Models with Excel
Three o'clock

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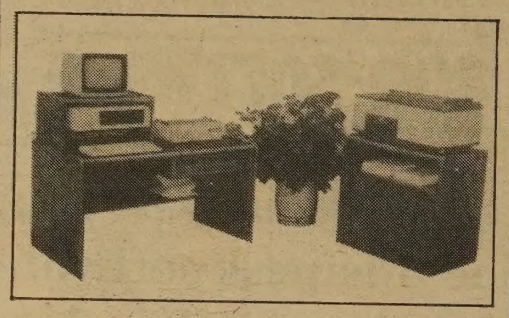

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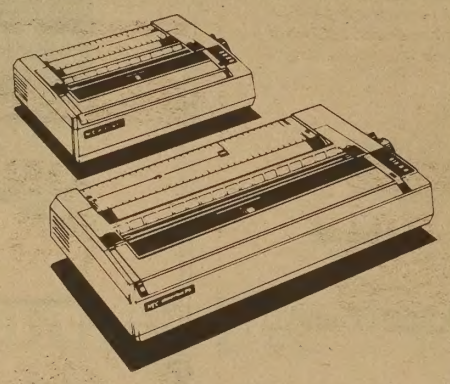

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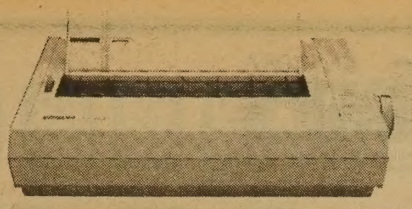

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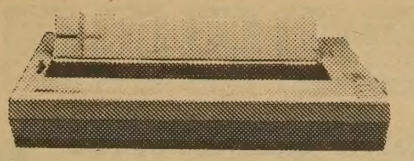

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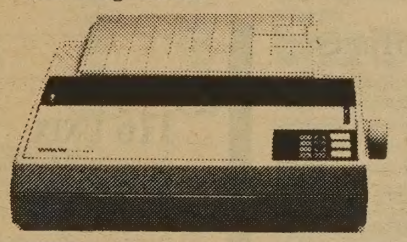

EX 1000
DOT-MATRIX PRINTER

The high speed wide carriage printer. Designed for corporate level and small business printing tasks, the high speed EX-1000 is as versatile as you need it to be. Print high speed drafts, near letter quality copies and graphics of unsurpassed detail.

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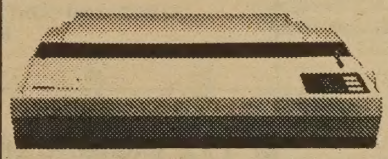

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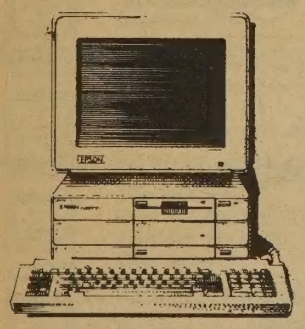

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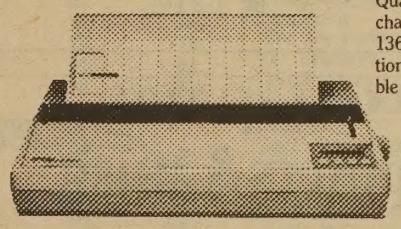

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MICROTIMES

49 Clone Makers Undaunted By PS/2

By Robert Beauchamp
While you might expect manufacturers of IBM clones and compatibles to be worried about Big Blue's new PS/2 series and its proprietary technology, that's not what's happening.

52 How To Upgrade An Old IBM Personal Computer

By Aubrey Pilgrim
In this chapter from his long-awaited book *Build Your Own IBM Compatible And Save A Bundle*, clone-builder extraordinaire Pilgrim explains what you can do to bring your old PC up to current performance standards without going to the poorhouse.

72 The Portal System: Fast, Friendly Regional Teleconferencing

By Corinne Cullen Hawkins
This South Bay system offers speed, ease of use, and a variety of interesting options to users, and its Sun-workstation-based modular technology offers virtually unlimited expansion possibilities.

HANDS ON

56 PC-Write: Powerful Word Processing At Shareware Prices

By Lenny Bailes
A look at Quicksoft's ever-popular, constantly updated IBM word processing program, which competes successfully with far more expensive commercial packages.

70 VP-Planner: More Than A 1-2-3 Clone

By Woody Liswood
Besides offering a hotly-litigated Lotus-like spreadsheet, this powerful and inexpensive package offers enough additional features and enhancements to make it the spreadsheet of choice in many businesses. Here's why it might be the package for you.

COVER STORY

60 The Industry According To Dvorak

By Mary Eisenhart
Arguably the industry's most widely-read columnist, John Dvorak is an outspoken advocate of user-useful products and a scathing detractor of those that don't meet his exacting standards. In this month's cover story he holds forth on the state of personal computing — what's right, what's not so right — in his customarily candid manner.

COVER AND CONTENTS PHOTOS: JIM MARSHALL

112 Exclusive To MicroTimes: The n.f. Factor: Online Terrorism Among The BIXen

By Brock N. Meeks
For 18 months, BIX, *Byte* Magazine's online conferencing system, was beset with crude bigotry and death threats posted repeatedly and without warning all over the system. Now that the culprit's been apprehended, MicroTimes telecommunications columnist and BIX telecommunications conference moderator Brock Meeks tells the inside story of a manhunt that involved a cast ranging from sysops to the FBI.

COLUMNS

116 UNIX

By Bennett Falk
The Hapless User's Tale — or, how to get UNIX's hidden capabilities to work for you.

118 Data Base Management

By Warren Sirota
Creating easy-to-use menus using dBASE and Clipper.

120 Amiga

By Matthew Leeds
What to expect from the Amiga 500 in terms of features and compatibility.

122 Atari ST

By Helmi Kobler
Low-end publishing on the ST, plus a look at new games and other software.

124 CP/M

By Robert D. Athey Jr.
A continuation of the discussion on CP/M's scientific applications.

SPECIAL SECTION

Computers & Music

76 Todd Rundgren: Connecting Artist And Machine

By Charles Bermant and Mary Eisenhart
Musician, artist, and hacker, Todd Rundgren pioneered musical applications of personal computers well before the advent of MIDI. In addition to his musical work, he's currently involved in designing better user interfaces for graphics applications in order to provide artists with more efficient, intuitive tools. Here he talks about his preferences in currently available equipment, the changes personal computers have wrought in the music industry, and what the technology still needs to accomplish.

92 MIDI And The Macintosh: The Musician's Workstation

By Paul Craner
MIDI technology and the Macintosh computer give the professional or amateur musician the tools that used to be the exclusive property of the super-rich superstar. Here's how you can put this system to work.

98 Personal Computers Revolutionize The Recording Studio

By Mary Eisenhart and Jacqui Ford
Personal computers and MIDI technology have profoundly affected the recording studio, in terms of how music is played and recorded as well as how the studios conduct their business. Representatives of two studios talk about how they and their clients have adjusted to the change.

102 Passport Designs And The Evolution Of MIDI For Micros

By Kristen R. Coston
Based in Half Moon Bay, Passport Designs was one of the earliest trailblazers in the computer music field with the Apple II program *Soundchaser*. Since then they've become a leader in the MIDI arena and now offer a wide range of music products for a variety of machines.

109 Music On The Amiga

By Ben and Jean Means
The Amiga's sophisticated music capabilities, along with its powerful multitasking features, make the machine a natural for music and video applications. This article profiles some of the leading music packages currently available for the Amiga.

DEPARTMENTS

8 But Jan Lewis Says...

Does your company need desktop publishing? Jan offers suggestions and criteria to help you make an informed decision.

16 First Person A Look At COMDEX In 1987

Distributor Dennis Gates reflects on the growth of the industry and how it's affected the way vendors do business in the highly-charged atmosphere of COMDEX.

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A question we're frequently asked is, "How do I gain control over my document production process?" Managers are tired of time wasted in the typesetting-and-printing turnaround loop. And they're being eaten alive by the costs of turning out quality documents through traditional production channels.

Think about the materials you need printed regularly and in a timely fashion: reports, manuals, catalogs, newsletters, directories, brochures, sales presentations, etc. A sizable chunk. Now think about your budget and where professional typesetters and printers fit in. Another sizable chunk.

If you produce or purchase forms, newsletters, brochures, reports, product packaging, direct mail pieces, advertisements, flyers, or any other documents that require professional typeset quality or that combine text with graphics, then you are a candidate for DTP.

How can you make these mountains into molehills? If the secret word hasn't occurred to you yet, here's a clue: DTP. Yes, you too can have your own mom-and-pop print shop. Desktop Publishing is an easy-to-learn, low-cost method for producing professional-quality documents in-house.

DTP is the latest step in the evolution of business publishing. When many businesses changed from using typewriters to word processors, they thought all their problems were solved. But although word processors allow documents to be changed easily and quickly, they offer little in the way of page design or the possibility of merging text with graphics. By comparing the preparation of a DTP document to the steps a document traditionally goes through before being printed, you can better understand the advantages of DTP.

Production of a traditionally prepared document begins with writing text. Whether prepared on a typewriter or word processor, the text is preprinted and then taken to a typesetter. There, the copy is keyed into typesetting machines that print it out on long sheets of paper, called galleys. A paste-up artist cuts up the galleys, and pastes or waxes them onto paste-up boards in accordance with instructions from whoever designed the layout. If graphics are to be included, they are photographically enlarged or reduced to fit the available space. The reproduced graphics are then added to the page. Once all text, graphics, rule lines, captions, and other elements are placed on the board, a proof is made and sent for corrections. If changes are needed, the corrections are typeset into galleys, cut out, and pasted over the errors. After the page is completed, it is sent to an in-house or outside printer for reproduction on a copier or offset printer.

With DTP the steps are similar, but everything is done electronically. The copy is typed into a word processing package that's compatible with the DTP software, then stored on disk. The DTP software is then used to electronically place the word processing file on a page or several pages. It is here that the user can determine the number and width of columns, whether a story runs on one page or jumps onto others, the number of pages, placement of rule lines and graphics, etc.

Graphics stored on disk can also be added. Cropping, enlargement, or reduction of graphics can be done in the DTP system. Corrections also can be done right on the computer screen. Even major edits like changing type size or rearranging paragraphs can be easily accomplished.

Once the page is complete, the user selects the print command and the software "sends" the document to a laser printer. In a few moments, the printer outputs a document complete with text and graphics.

Obviously, the DTP process offers quicker turnaround time, more control over the production process, and elimination of typesetting bills. But is it right for your business? The best way to answer that question is to ask yourself some basic questions about the kind of documents you produce or use on a regular basis, the need to make last-minute changes to your documents, and required turnaround time. Also give some thought to who will be using and learning the DTP system. Last, but not least, can you afford it?

If most of your documents are letters, memos, or internal communications where typewritten text is satisfactory, you probably won't benefit from a DTP system. But if you produce or purchase forms, newsletters, brochures, reports, product packaging, direct mail pieces, advertisements, flyers, or any other documents that require professional typeset quality or that combine text with graphics, then you are a candidate for DTP.

The beauty of DTP is that changes are a snap. For example, say you produce a product catalog for a trade show. A week before the show you learn that the prices of 50 items need to be increased. If the catalog had been sent to an outside typesetter, chances are that these changes would take several days, causing you to miss the trade show. (Your only alternative would be to settle for a typed, photocopied errata sheet stapled to the catalog cover or tucked inside and easily lost.) With DTP, however, you can make the changes in usually less than an hour.

If you ever had to settle for a typewritten document because your printer couldn't turn the job around fast enough, DTP could be the solution you've been looking for. In most cases, a document produced with DTP takes significantly less time than one sent out of house.

However, if you currently send your documents out to be typeset and pasted up, you may pay a lot,

If you ever had to settle for a typewritten document because your printer couldn't turn the job around fast enough, DTP could be the solution you've been looking for. In most cases, a document produced with DTP takes significantly less time than one sent out of house.

have to wait a long time, and be unable to make changes, but at least you're not taking up your employees' time.

Before investing in DTP, you must decide if you can allocate personnel to document production. In a large company, you may need to add to your art or marketing staff or retrain people already in those departments. A small company may have to allocate part of a current employee's time to DTP. The amount of time or additional staff required will depend on the number and type of documents your company produces.

The price for a fairly powerful DTP system that includes a personal computer, laser printer, and software can start at around $9,000. Of course, if you already own an IBM-AT compatible personal computer or Apple Macintosh, you can build your system around it. Furthermore, some copy centers and typesetters are beginning to install laser printers and personal computers. If one of these companies is located near your office, you may be able to arrange to use its laser printer and save the cost of buying one.

When trying to cost-justify a DTP system, take into account your yearly bills for typesetting and paste-up, the times you've had to settle for less-than-perfect documents because of printer deadlines, and the high-quality documents you could be producing if you had the facilities in-house.

The DTP explosion really began

Jan Lewis is a well-known industry analyst and president of the Palo Alto Research Group, a consulting firm for the microcomputer industry. This article has been reprinted with permission from Computer Insider, *PARG's newsletter.*

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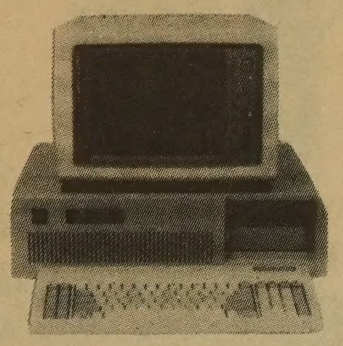

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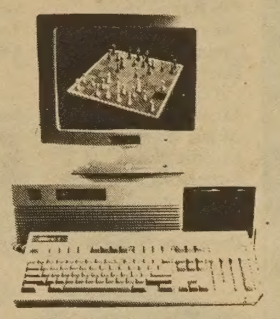

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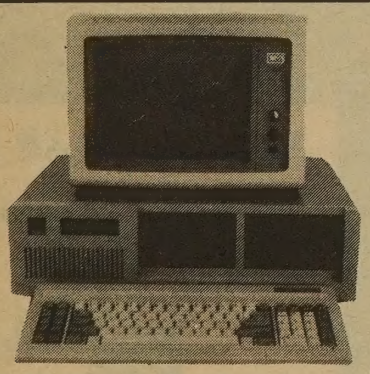

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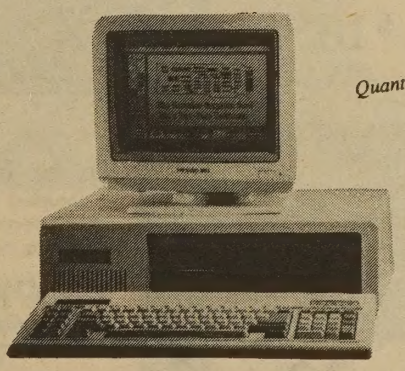

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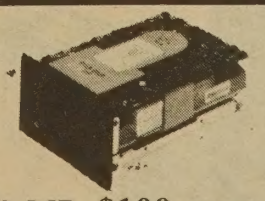

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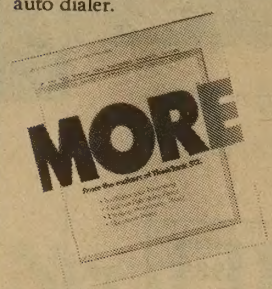

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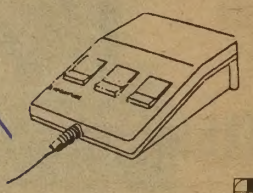

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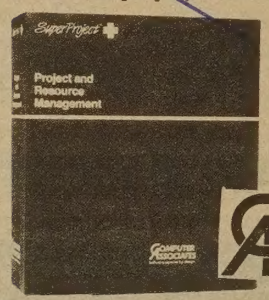

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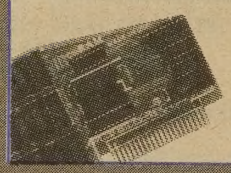

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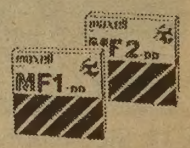

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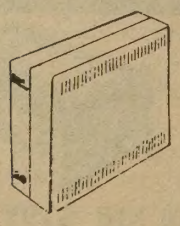

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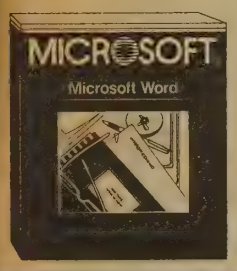

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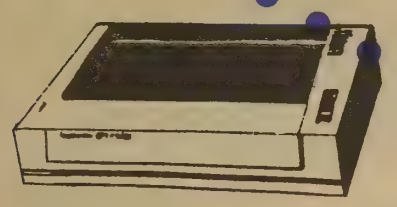

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Amiga

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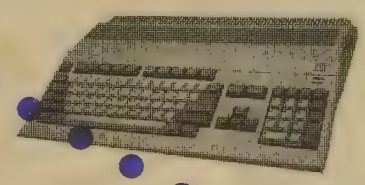

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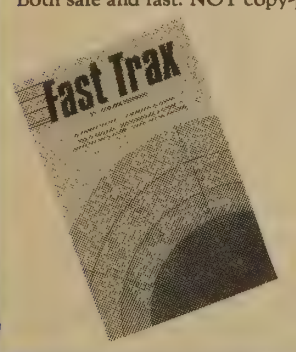

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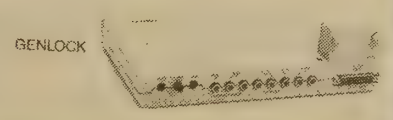

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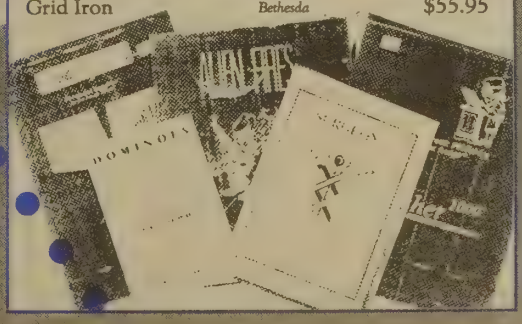

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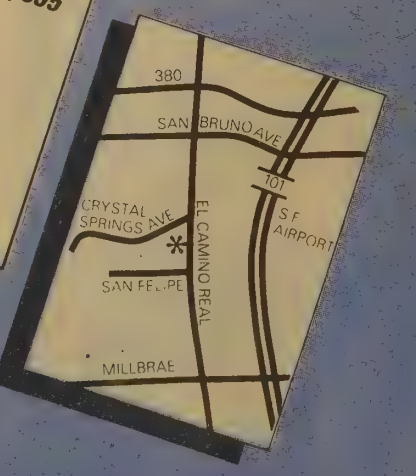

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with the introduction of three products: Apple's Macintosh personal computer, Apple's LaserWriter laser printer, and Aldus Corporation's *PageMaker* software for the Macintosh. Paul Brainerd, president of Aldus, coined the term "desktop publishing" to describe the use of personal computers to merge text and graphics for high-quality output. DTP is the electronic equivalent of typesetting and page composition.

A DTP system consists of hardware and software. The hardware required includes:

A personal computer. Apple was the first company to offer a low-cost personal computer that used a graphics environment suitable for DTP. Recently introduced DTP software, however, can run on a number of systems, including IBM and compatible personal computers.

A laser printer. This printer functions much like a xerographic copier to produce a page of near-typeset quality.

A mouse. A mouse is a small box with a roller ball on the bottom and one to three buttons on the top. It is used in conjunction with the personal computer keyboard to select commands, text, and graphics. Apple's Macintosh and IBM's Personal System/2 Model 30 come standard with a mouse. It is an option available for other personal computers.

A complete DTP system also requires several software packages:

Page composition software. Packages like *PageMaker* allow users to design pages, set number and width of columns, determine margin width, select justified, ragged right, or ragged left columns, typeset headlines, edit text, merge text and graphics, crop and resize graphics, draw lines, and perform all the other processes generally performed in typesetting, design, and paste-up operations.

Page Description Language (PDL) software. This is software that you can't see, but which ensures that page-composed files can be read by the printer. Adobe Systems' PostScript, the de facto standard PDL, comes with some printers, such as the Apple LaserWriter. It also may be bundled with a complete system (for example, the IBM Solution Pac Personal Publisher System), or on a card that goes into the computer.

Word processing software. This is where the bulk of the writing and editing is performed. Although most page composition software includes a text editor, it generally does not contain many of the features of a word processing package and is best used only for minor editorial changes. The word processing package must be compatible with the DTP software.

Graphics software (if graphics are used in the documents). This can include packages for charting, drawing, painting, CAD/CAM, image libraries, and other graphics software. Again, make sure the package you choose is compatible with your DTP software.

Optional, but helpful and expensive, pieces of hardware are a scanner or a digitizer. A scanner can save you the trouble of re-keying material typed on a manual typewriter or hard copy from a non-compatible word processing system. It scans the printed text and converts it to a machine-storable form. Scanners start at about $2,000 and cannot read all fonts, so the equipment needs strong cost justification. Production houses will frequently scan outside material for as little as $1 per page. Digitizers are much more sophisticated and can cost from $1,000 to $4,000. A digitizer scans half-tones, diagrams, charts, signatures, line drawings, and other documents, and digitizes them so your computer can store the image on disk.

When trying to cost-justify a DTP system, take into account your yearly bills for typesetting and paste-up, the times you've had to settle for less-than-perfect documents because of printer deadlines, and the high-quality documents you could be producing if you had the facilities in-house.

Although DTP has many advantages, some things are beyond its capabilities. For example, laser printers can be very slow, especially if you add many graphics to a document. In most cases, you will use a laser printer to produce a master copy, then reproduce that document on a copier or send it out to an offset printer, depending on the number of copies required, the quality desired, and the required turnaround time.

For example, *PageMaker* can be output on an Allied Linotronic, producing typeset-quality pages. If you plan to produce many typeset-quality documents, make sure that your DTP software can be read by computer-driven phototypesetting equipment.

Despite these few drawbacks, DTP can greatly improve your business communication procedures. As noted, DTP can offer you greater control of the quality of business documents, typesetting bills, and turnaround time. Above all, DTP allows you to improve your communication efforts with your employees, potential and present customers, and community members because it allows you to have more creative input, enjoy quicker access to your documents, and enhance the overall quality of the documents you use to promote your company's interests. □

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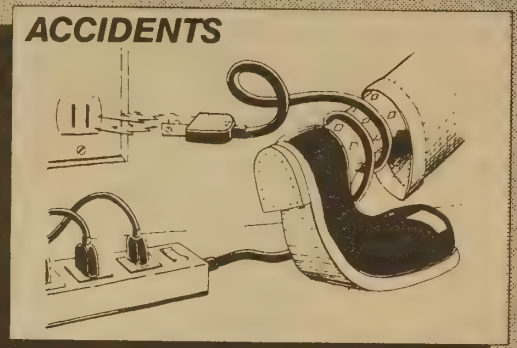

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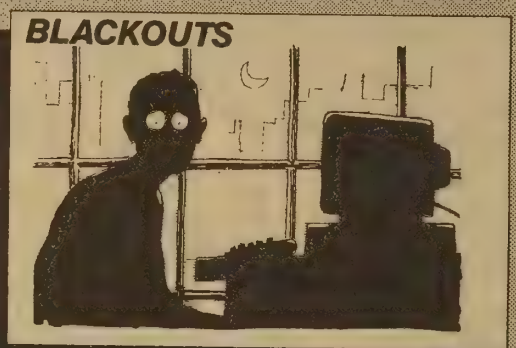

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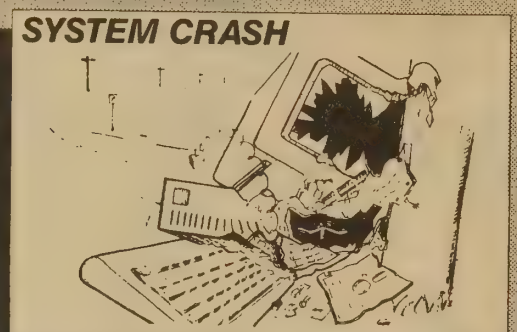

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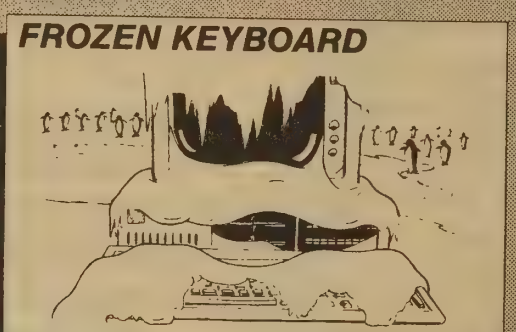

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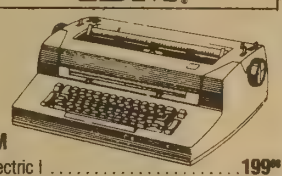

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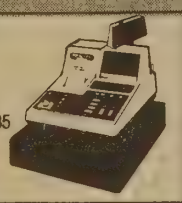

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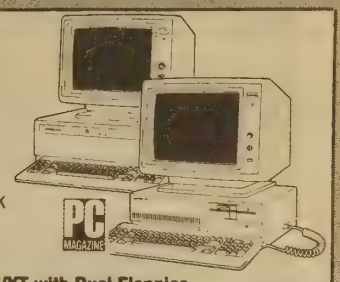

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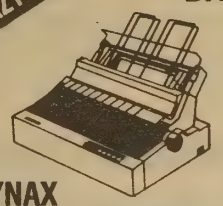

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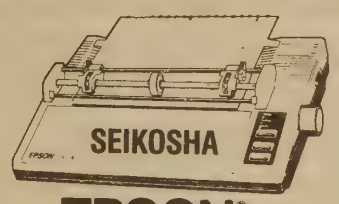

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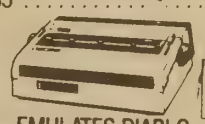

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A Look At COMDEX In 1987

By Dennis Gates

It's the first of May and I've just discovered I need to go out and buy a new appointment calendar with space for at least twice as many appointments as the one I've been using. I'd even need *two* of them if I'd scheduled an appointment with every single vendor who's been calling Gates Distributing over the last several weeks to see if they can get "just a little" of our time at Spring Comdex being held in Atlanta this June. This is very different from the approach we took to these shows in the past. In those days, if I'd had any scheduled appointments at all, they were most likely noted on the back of a matchbook cover . . .

Looking back nostalgically to the "good old days," I remember arriving in Atlanta on May 22nd, 1984, with the anticipation of running into many friends and acquaintances among the exhibits — people whose names were starting to read like a "Who's Who in the Microcomputer Industry" — doing exactly the same thing as I was, having some genuinely interesting conversations about new products and the issues of the day. We speculated about everything from how the newly introduced Macintosh would fare, to whether anybody besides Microsoft would write any software for it. What on earth are we going to do with all the CP/M format software we still have hanging around? What new, powerful software would we find here that would take advantage of all that extra memory which AST Research was providing with their expansion products for the IBM PC? It was worthwhile conversation, and we managed to learn something in the exchange of ideas.

One of my major objectives was to find some truly interesting, innovative and marketable products to add to our line, which then consisted of just four vendors. It used to be you could count on spending each day of the show wandering through the exhibits looking for new and exciting things. It wasn't hard to do. The halls were filled with creative geniuses who had tremendous amounts of technical wizardry. They had great products to offer, but these guys weren't tremendously savvy from a business standpoint. It didn't matter. We were genuinely interested in their innovations ourselves, and besides, they weren't asking for insane commitments and air-tight contracts. They wanted to get some exposure for their products. And we distributors were just as interested in looking at those products as the vendors were in showing them off. Additionally, they were just beginning to realize that it was exhausting and unprofitable to be taking single orders themselves, and they needed the services a distributor could provide.

Getting back to the future, there are so many more dynamics at work today. In addition to the increasing number of products there are to see, we have more issues to discuss now too. It's almost as though someone should schedule post-Comdex conferences and displays, because so many people are busy with scheduled meetings during the show itself.

Today's issues are similar in form to those we dealt with three years ago, but seem to have broadened in scope and impact now. The IBM announcements on April 2nd of this year have had a significant effect on Gates Distributing's business and that of our vendors, and will continue to have wide-ranging implications for quite a while, I believe. Curiously, while there was a temporary drop in the video and micro-to-mainframe board level products, and to a lesser extent in the various enhancement boards, much of that decrease came from the corporate resellers, who, for the most part, are non-IBM authorized. At the retail chains, however, where they've been showing the new IBM machines side-by-side with the existing hardware, they are finding they must admit to their customers that there's no meaningful software available yet for the new products. So these customers are realizing that if they need something right now they'll buy the "old" technology. Ultimately, I believe, IBM's PS/2 series is creating tremendous opportunities for third party manufacturers.

These and dozens of other issues including channel conflict, copyright infringements, mergers and acquisitions, and the supposed demise of the small regional distributor, are all worth some time, evaluation, and speculation. But will I have time for any of this next month? Nope. My staff and I, along with every other major distributor in the industry, will be in meetings morning, noon and night. I'll actually have to wear my watch. I won't even have time to eat lunch. If it's anything like last Fall's Las Vegas Comdex, I'll barely have time to walk one-half an aisle during the whole show! In the evenings, these meetings take on a different form. They will call them hospitality suites, parties, even "gala extravaganzas," but don't kid yourself. This is serious stuff. DCA has even scheduled meetings for us throughout the weekend prior to the opening bell. (However, their party during Atlanta Comdex does promise to be one of the year's best.)

Instead of the usual socializing, distributors and vendors are committing to multi-million dollar deals. Nowadays, we're often looking at the numbers before we even see the products.

These meetings are intense! Now, instead of the usual socializing, distributors and vendors are committing to multi-million dollar deals. In a courtship that may have begun months or even years ago, we've discussed strategies, pricing, and how our competition is measuring up. Now it's time to put the money on the table. And we're not talking about hundreds or even thousands of dollars any more, either. It makes you really think twice about ordering that second Chivas on the rocks! Nowadays, we're often looking at the numbers before we even see the products.

Another very interesting thing has happened at these meetings. Vendors have started to vie for the importance connected with just *who* is attending their affairs. There was a time that a major manufacturer or publisher could count on having the president or CEO of a distributor's organization show up at their annual blow-out. These days, distributors have matured so much, and there are so many of these meetings, it has become somewhat of a contest to see which representative will come. When the vendor has spent $75 thousand to put on a party, invited the Big Cheeses, and ends up getting some third-tier management assistant instead, one can stand back and assess the relative lack of importance that particular line has to that distributor.

Now I've got to admit that I can understand why these vendors are being so — shall we say, demanding, of the distributors' time and attention. They spend big bucks coming to Comdex, and to justify this expense it makes sense to get us all into their meetings and do just as much business as is humanly possible at one time.

I also must say that regardless of the tactics, working together with the companies at these shows has helped to create some tremendous business relationships and built up some significant loyalties. Nearly every line Gates Distributing has ever brought on is still with us today.

So, I'll pack-up my bulging calendar and prepare for my meeting marathon in Atlanta next month. I intend to walk away with more than $100 million in commitments in my briefcase. So, let's see — that means Micro D will have done about $300 million, and Ingram probably somewhat higher than that. And then there are the large chains and Softsel and a few other major distributors. Mentally adding all that up, I'll estimate that from this group alone upwards of $2 billion will be arranged for purchase of product in the ensuing months. And that won't even include orders for the "big three" computer manufacturers!

It's no wonder that what goes on at Comdex has a major impact on what shapes the entire industry — the lines which the retail channels will carry, what the end-users will buy, and how much they'll be paying for the products. (I only hope I'll have a little time left over to talk to some new companies and see a few interesting product innovations myself!) □

Dennis Gates is the president of Gates Distributing, Inc., a multi-regional distributor of a limited number of high-quality product lines, including Alloy, Amdek, AST Research, Autodesk, Borland, Blaise, DCA, Hercules, Intel, Irwin Magnetics, Microrim, Microsoft, Orchid, Panasonic, Telebit, Toshiba, Video-7 and WordPerfect. Serving only the reseller for six years, Gates Distributing has it's corporate headquarters in Richmond, California, with branches in Southern California, Texas, Washington, and Illinois, and offices opening soon in New York and Georgia.

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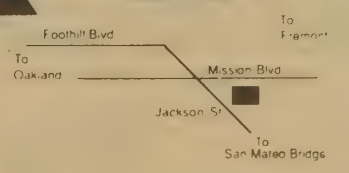

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June 10-11 How To Buy And Sell Business Opportunities. Holiday Inn, Santa Cruz. Call American Business Consultants, Inc. (408) 738-3011/ 732-8931 for information.

June 11 Breakthrough Software Workshop. Know How, San Francisco. Call Breakthrough Software Corp. at (415) 898-1919 for information.

June 12 Free Demonstrations Of Microsoft Word 3.11. Berkeley Marina Marriott. Call 800-SOFTWARE or (415) 644-3611 for information.

June 13 Bay Area Computer Swap. Santa Clara County Fairgrounds. Call Computer Swap (415) 340-9113 for information.

June 13 Oakland Computer Expo. Oakland Coliseum. Call Golden Gate Shows (415) 388-8893 for information.

June 16 T1 Networks. Golden Gate University, Los Altos. Call Able Communications (408) 945-1484 for registration information. Other courses also available.

June 17 Free Demonstrations Of Microsoft Word 3.11. San Francisco Hyatt Regency. Call 800-SOFTWARE or (415) 644-3611 for information.

June 18 Joint Professional Societies Consortium. George Morrow keynote speaker. Stanford University (408) 298-8101 for information.

June 18 Build Your Own PC. West Valley College, (408) 867-0440 for information.

June 18 Integrated Voice And Data Educational Clinic. First of six classes. Redwood City. Call ProTel at (415) 227-5637 for information.

June 19-20 World Of Atari. Techmart, Santa Clara Convention Center. Sponsored by Bay Area Atari User Groups and Atari Coroporation. Call (408) 745-2012 for information.

June 20 San Francisco Computer Show. The Concourse. Call Golden Gate Shows (415) 388-8893 for information.

June 20 Accounting And Financial Management Seminar. Dunfey Hotel, San Mateo. Contact Software Entrepreneurs' Forum, (415) 854-7219.

June 22-25 Effective Management Skills For The MIS Manager. San Francisco Hilton & Towers, San Francisco. Call Vern Lautner (212) 903-8208 for information.

June 23 Alternate Access. Golden Gate University, Los Altos. Call Able Communications (408) 945-1484 for registration information. Classes repeated in July and August.

June 23-24 Advanced ISDN Golden Gate University, Los Altos. Call Able Communications (408) 945-1484 for registration information. Classes repeated in July and August.

June 23-26 AutoCAD Expo '87. Convention Center, Washington, DC. For more information, contact Autodesk, Inc., (415) 332-2344, ext. 799.

June 23-26 Fiber Optic Communications. Palo Alto. Contact Integrated Computer Systems (800) 421-8166.

June 24 Mac To The Future. San Francisco Hyatt Regency. Call 800-Software (415) 644-3611 for information.

June 24-26 Graphic Design For Visible Language Programming. UC Santa Cruz Extension (408) 429-4535 for information.

June 24-27 PubForum. Fort Mason Center, San Francisco. Call Bookbuilders West (415) 488-0161 for information.

As a community service, MicroTimes lists trade shows, seminars, and other special events in the Calendar of Events free of charge on a space-available basis. To improve the likelihood of your listing's timely inclusion, please make sure we have the necessary information no later than the first of the month two months before the cover date of the issue in which you'd like it to appear (i.e. the deadline for the December issue , on the street in November, is October 1). Send to: MicroTimes Calendar of Events, 5951 Canning St., Oakland, CA 94609.

News about user group meetings and other regularly scheduled activities should be sent to User Group Network at the same address.

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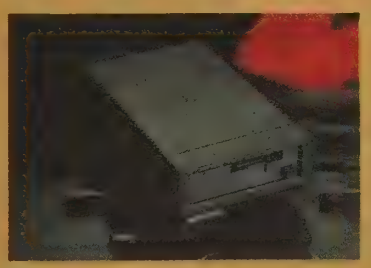

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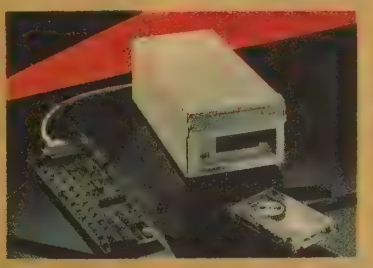

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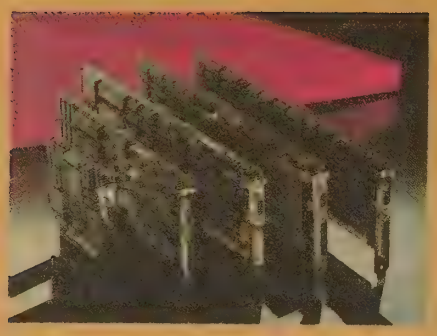

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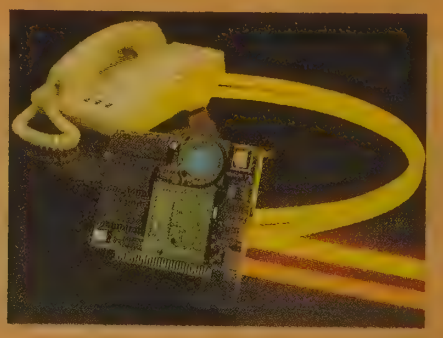

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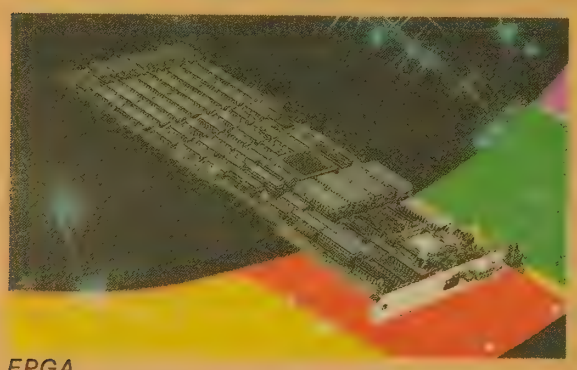

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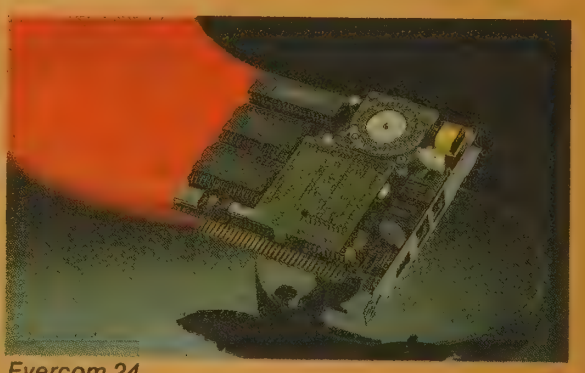

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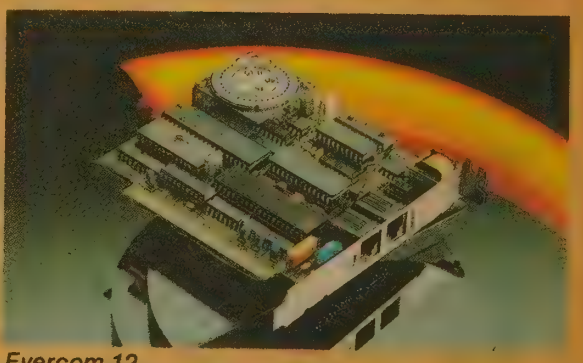

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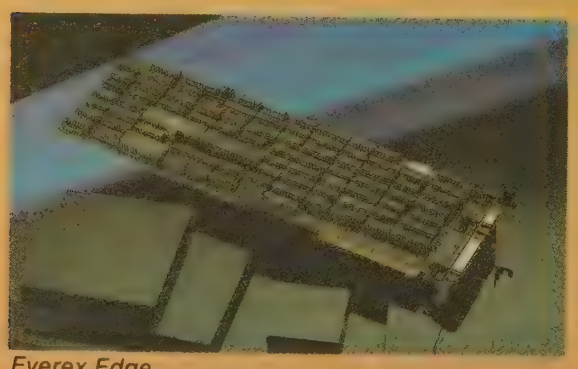

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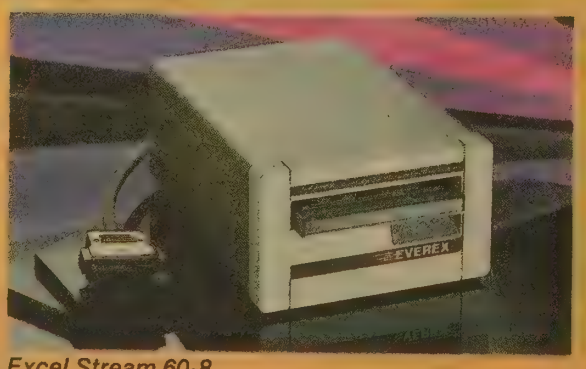

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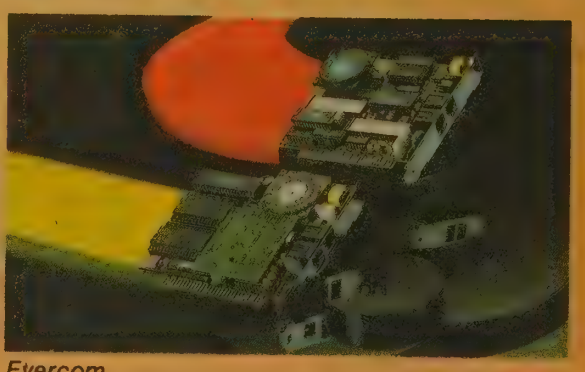

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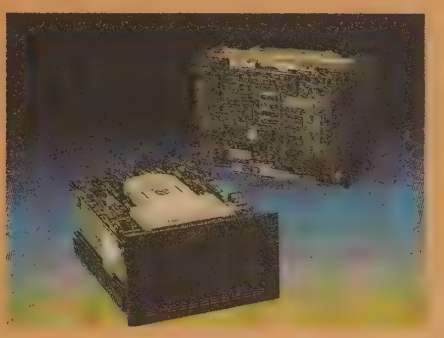

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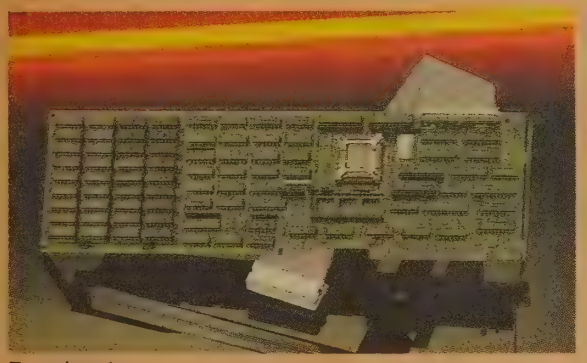

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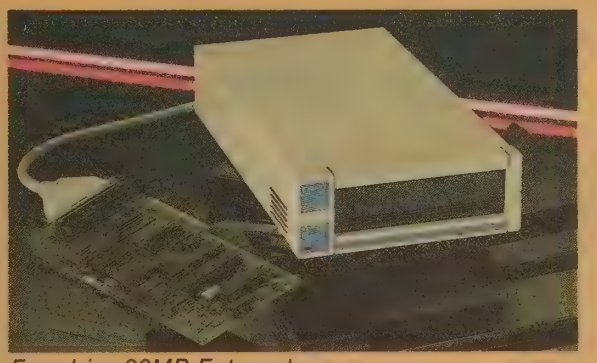

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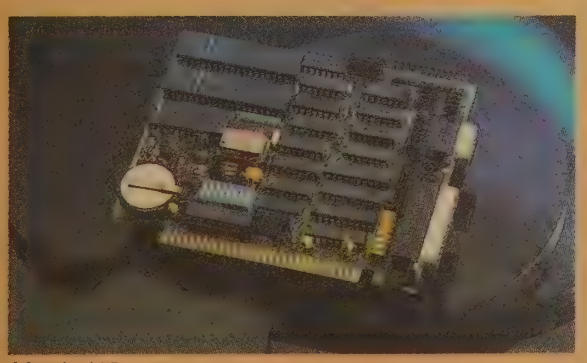

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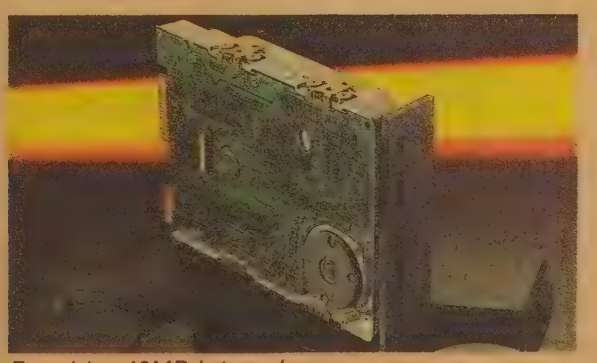

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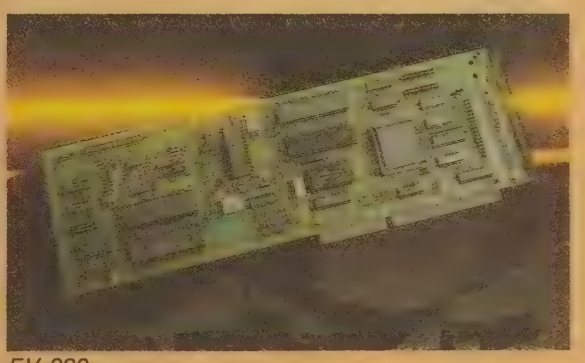

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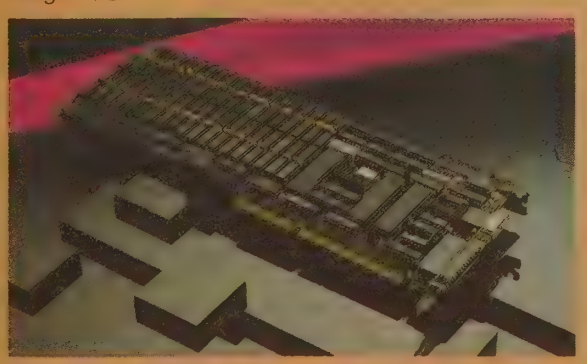

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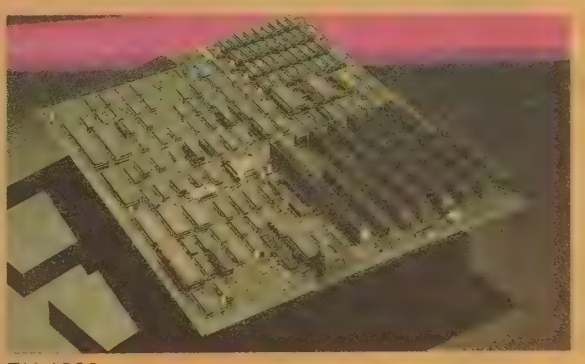

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Apple News

Apple Computer (408/996-1010) has announced plans to create an independent software company. This company will develop, publish and market applications software for the entire Apple computer product line, including programs developed by third parties as well as existing applications such as *MacWrite* which are now sold under the Apple label. Initial plans call for this new company to be formed as a wholly-owned subsidiary of Apple, and to become an independent company with the next year with Apple keeping a minority ownership position. William Campbell, Apple's former executive VP of US sales, has been named as the president and CEO of the new company and he will be recruiting staff immediately.

Ahead of schedule, Apple has shipped the first Macintosh II. A total of 75 Mac IIs came off the Fremont, CA, production line. The Mac II is intended for advanced applications in business, desktop publishing, higher education and engineering environments. The unit features a 32-bit 68020 CPU, six internal NuBus slots, an optional color display, network connections, and MS-DOS compatibility. Apple will also soon be offering its own version of the UNIX operating system to run on the Mac II.

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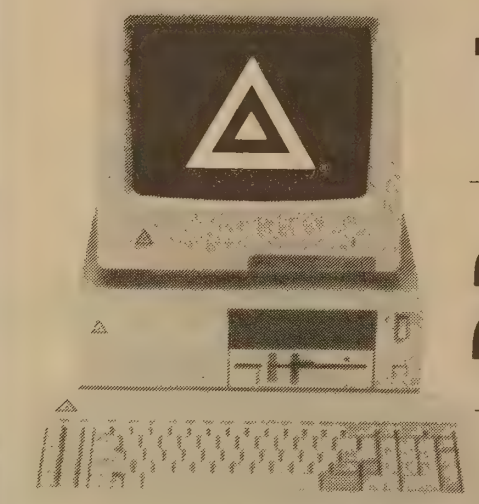

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MICROPOINT

Autodesk Stock Offering

Autodesk, Inc. (415/331-0356) has made plans to register a public offering of nearly three million shares of common stock. The offering will only be made by means of a Prospectus.

Print Shop Recall, Toy Shop Price Cut

Brøderbund Software (415/479-1700) urges all Macintosh users who are operating *The Print Shop* version 1.0 and 1.1 to return their disks to the company for a free update that corrects a bug in those versions. Under certain conditions, a hard disk can be erased when either of the two versions are used. There is a program on CompuServe in the MAUG forum that also corrects the problem.

Brøderbund has also announced that *The Toy Shop* has been re-priced. The IBM and Mac versions will now retail for $49.95 (instead of $64.95), and the Commodore and Apple II version is $39.95 (down from $59.95).

Changes At Cullinet

The corporate reins of control at Cullinet Software are being passed by Founder and Chairman of the Board John Cullinane to David Chapman, effective September 22 of this year. Mr. Cullinane will continue to serve the company as a consultant and will review company strategies.

Intellicreations Joins EA

Another affiliated label has been signed by Electronic Arts (415/571-7171) as part of its Affiliated Labels program. The latest to join the San Mateo, CA, publisher of home entertainment software is Intellicreations (Chatsworth, CA), which will be producing 66 stock keeping units for all major home computer systems by the end of June '87.

Laser Friendly Goes Public

Going public after a merger is a decision that has been made by Laser Friendly Inc. (408/730-1921). First, the company merged with Pirrana Corp. (Toronto, Canada) and now stands as a publicly held Canadian company operating out of Silicon Valley. Principal shareholder is Print Three (Scarborough, Ontario).

Correction From The TaskForce

Our company would like to thank MicroTimes and Mr. Bennett Falk for mentioning our products in his UNIX column in your May 1987 issue.

We would like to bring one error to your attention. Our correct address is:

TaskForce Software Corporation
100 Hegenberger Road, Suite 200
Oakland, CA 94621
(415) 569-9989

Thank you.

Paul V. Farr
TaskForce Software Corporation
(RAM)
Oakland

TaskForce is the publisher of TaskForce V, *a set of system management tools for UNIX users and administrators. We regret that the combination of a very old manual and a misplaced character led to a very inaccurate address when the company was mentioned... — eds.*

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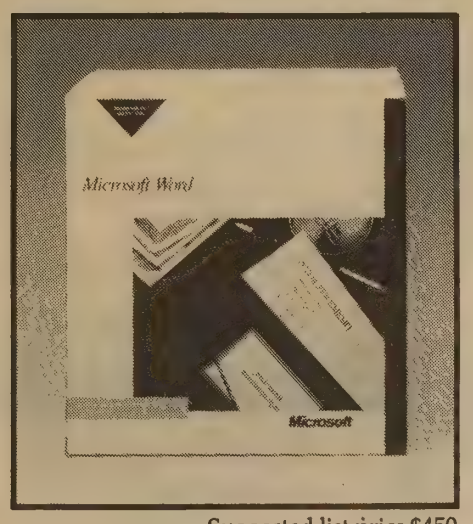

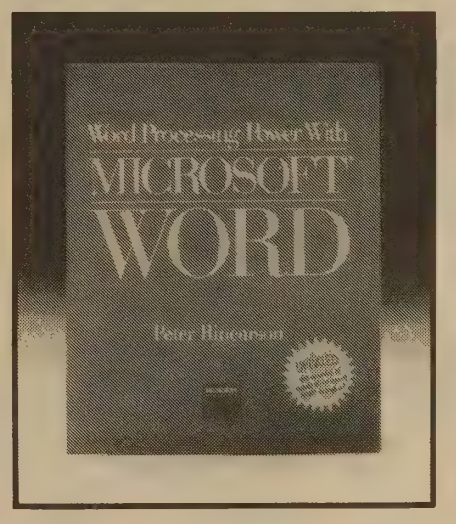

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Micrografx Supports PS/2

All of Micrografx Window applications software is now compatible with the new PS/2 family from IBM. The upgraded products include *Windows Draw, Windows Graph, In*A*Vision* and *Windows Clip Art*. The products now support IBM MCGA and VGA graphics standards and the new IBM mouse, with drivers contained for the full 640 by 480 resolution. The upgrade cost is $49.

More Fonts For Softcraft

The crafting of fonts for use with desktop publishing programs is an extremely important element for all users. Softcraft, Inc. (608/257-3300), the makers of *Fancy Font, Fancy Word* and *Laser Fonts* type-enhancement programs for dot matrix and laser printers, has now signed a licensing agreement with Bitstream, Inc. (Cambridge, MA). This will allow Softcraft to incorporate Bitstream's Fontware program into its product line, a definite enhancement.

Vega Deluxe Upgrade

Video Seven (415/656-7800) is announcing a free software upgrade for its Vega Deluxe video adapter. This freebie will make the adapter totally compatible with the IBM VGA, which is Big Blue's new PS/2 graphics standard. The VGA offers a screen resolution of 640 by 480 with 16 simultaneous color display—which happens to be identical to the resolution currently possible with the Vega Deluxe.

Wyse Cuts Prices

Prices have also been cut by local computer manufacturer Wyse Technology (408/433-1000). The company has lowered prices on the Wyse PC+ and original Wyse PC 286 IBM compatibles, while at the same time debuting a new family of 80286- and 80386-based machines. The price of the 9.54 MHz Wyse PC+ is now $1,199, and the 10 MHz Wyse PC 286 is $1,999.

Zenith Increases Shares, Drops Prices

An increase from 50 million to 100 million authorized shares has been announced by Zenith Electronics Corp. (312/391-8181) at the company's annual stockholder's meeting. The 50 million newly authorized shares will be available for business expansion programs, stock "splits" and other future corporate purposes.

Zenith Data Systems (312/699-4839) has reduced retail prices by $300 on its Z-159 line of IBM compatible computers and, at the same time, have increased the computer's RAM from 256K to 512K. The Model 1 with a 5¼" floppy drive and a HGC/CGA board is now $1,499, the Model 2 with two 5¼" drives and HGC/CGA board is $1,599, the Model 3 is $2,199 and includes one floppy, a 20 MB drive and MS *Windows*, the Model 12 is $1,899 and has an EGA board and two 5¼" drives; and the Model 13, which contains an EGA, 20 MB drive, one floppy drive and MS *Windows*, is now $2,499.

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More than 95% of available Macintosh software runs on the Lisa. Call today for our free Lisa Fact Book and see how the Lisa can handle the application you have in mind for much less than you would spend on a newer Mac and hard drive. Plus, we'll let you know how you can have, for no extra charge, up to $425 worth of todays best-selling Mac software titles. Programs like Ragtime, Word 3.0, PageMaker, Excell, Super Paint, Omnis 3 Plus, Sidekick and more.

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Product Announcements

AMIGA

Artwork Add-Ons

Two new artwork collections, entitled *Art Parts: Volume 2* and *Seasons & Holidays* have been released by Electronic Arts for *DeluxePaint II, DeluxePrint* and *DeluxeVideo* for the Commodore Amiga computer. *Volume 2* has over 125 images and brushes that cover a wide assortment of subjects, from stars and planets to human faces and street scenes. The Seasons & Holidays disk provides over 100 ready-to-use clip art images for dozens of holidays and special occasions, such as Christmas and Hanukkah. ($29.95 each).

Deluxe Video

An expanded version of the award winning video animation program *Deluxe Video* has been released by Electronic Arts (415/571-7171) for the Commodore Amiga. The new release is Version 1.2, and has as new features such as Overscan for an edge to edge television look, Interlace for broadcast quality recording and a faster frame rate for smoother animation and scrolling. The program contains a free Post-Production Kit ($29.95 value) which contains 17 scene generators, 18 new images, seven instrument sounds, three sound effects, four wipes, eight pictures, and eight songs for use in video production. Among the effects are custom title screens, and several movie marquees that home video producers can add to their creations. Users who have the Amiga's expanded RAM have access to a larger library of sounds and images while creating their videos. The program uses Amiga *Kickstart 1.2* and can be used with Commodore's *Genlock 1300*, which enable users to overlay images created with *DeluxeVideo* 1.2 onto pre-recorded videotape. ($129.95).

APPLE II

IIGS Deluxe Paint

Electronic Arts (415/571-7171) has released Dan Silva's *Deluxe Paint II* for the Apple IIGS computer

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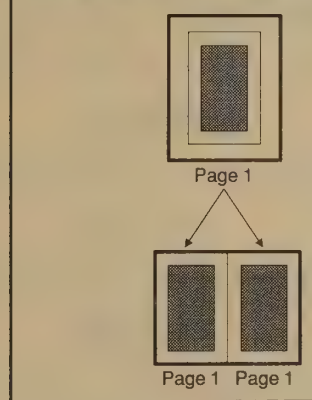

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- **Improves photocopy quality.**
- **Reduces reproduction costs.**

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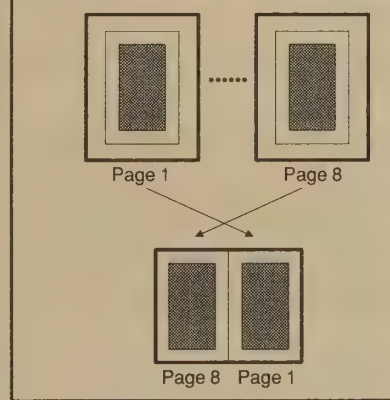

Prints 2 pages on each sheet of paper, with the pages paired-up so they will fall in the proper order when the sheets are folded in half to form a booklet.

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- **Reduces reproduction costs.**
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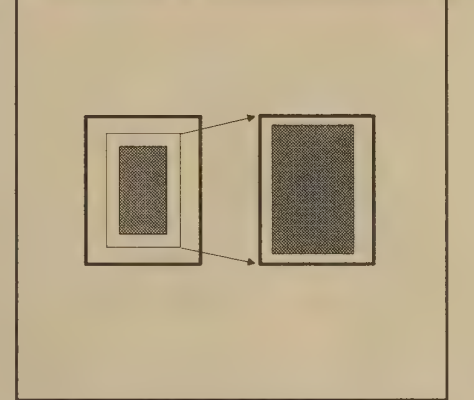

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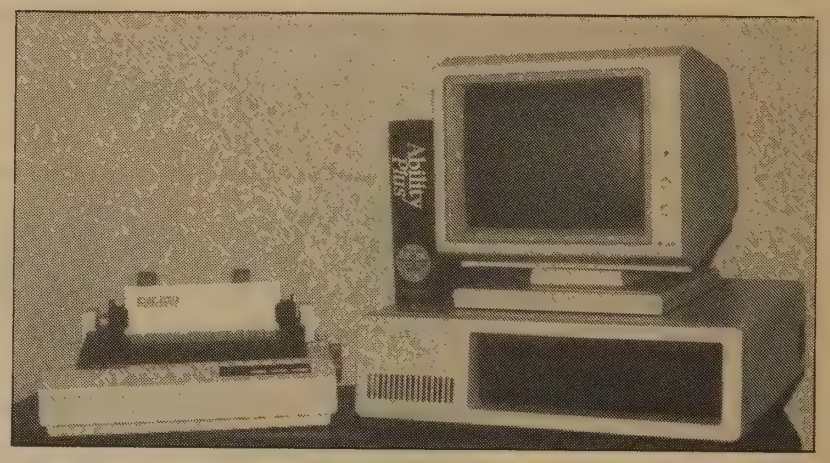

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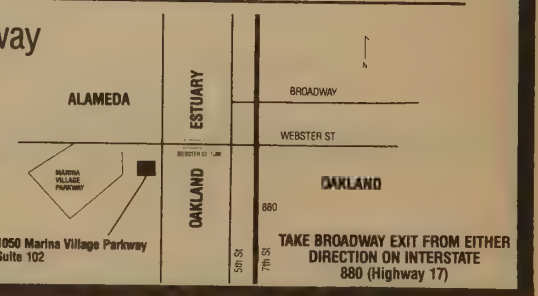

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system. This is an expanded version of the award winning *Deluxe Paint*, and is a professional-quality graphics tool which creates colorful artwork faster and more easily than conventional techniques. There are over 90 painting tools and effects, including Perspective, Variable Zoom, Stenciling, Fixed Backgrounds, Gradient Fills, Pattern Fills, custom brushes, color cycling, font control and symmetry. Virtually any image can be brushed, and artists have a custom palette of 16 colors from 4,096 available shades. Four-level Zoom and anti-aliasing are also supported. ($99.95).

ATARI

Graphics Companion

Datasoft (818/886-5922) has a new addition to its computer/VCR utility product entitled *Video Title Shop*. The company has now released *Graphics Companion*, which offers pre-designed screens covering all of the major holidays as well as screens for special occasions. The main program allows the user to create graphics and text screens that can then be copied to video tape and used as introductions to, or comments on, their videos. Features included in the main program include wipes, multi-directional scrolling, fizzles, controlled time sequences, and a selection of size and type styles. The *Graphics Companion* screens are designed so that you can insert your own text or modify the graphics for a more personalized version. The disk contains 25 screens and five borders. ($19.95).

IBM & COMPATIBLES

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Combining the ease of use of the PC with the power and storage of the mainframe comes *Multi/Cam* from AGS Management Systems (215/265-1550). *Multi/Cam* is a micro/mainframe based CASE (Computer Aided Systems Engineering) program that is used for systems analysis and design, program development, project management, documentation, communications and training from a single automated workstation. Systems development includes multiple development life cycles supported by a standard framework, with project prioritization, estimating, scheduling and tracking all standardized and linked together.

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Anyone who requires equation-handling power that is not currently available in calculator packages may wish to take a peek at *Eureka: The Solver* from Borland International (408/438-8400). This is a second generation package that provides fast and reliable solutions to real-world mathematical problems. The program will solve complex problems that contain undefined variables, generate tables and plots, and perform "what if" analysis. You simply write an equation, set the options, and instruct the software to solve the problem at hand. After the equation has been solved, *Eureka* can then verify and display the accuracy of the solution. Powerful, expanded record-keeping and reporting features are included. ($99.95).

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For only $39.95, Central Point Software (503/244-5782) has released a brand new version of *PC Tools*. Version 3 includes Mirror and Rebuild, programs that restore lost information due to accidental use of the DOS FORMAT, RECOVER and ERASE commands; Compress, which optimizes your hard disk; and PC Backup and PC Re-

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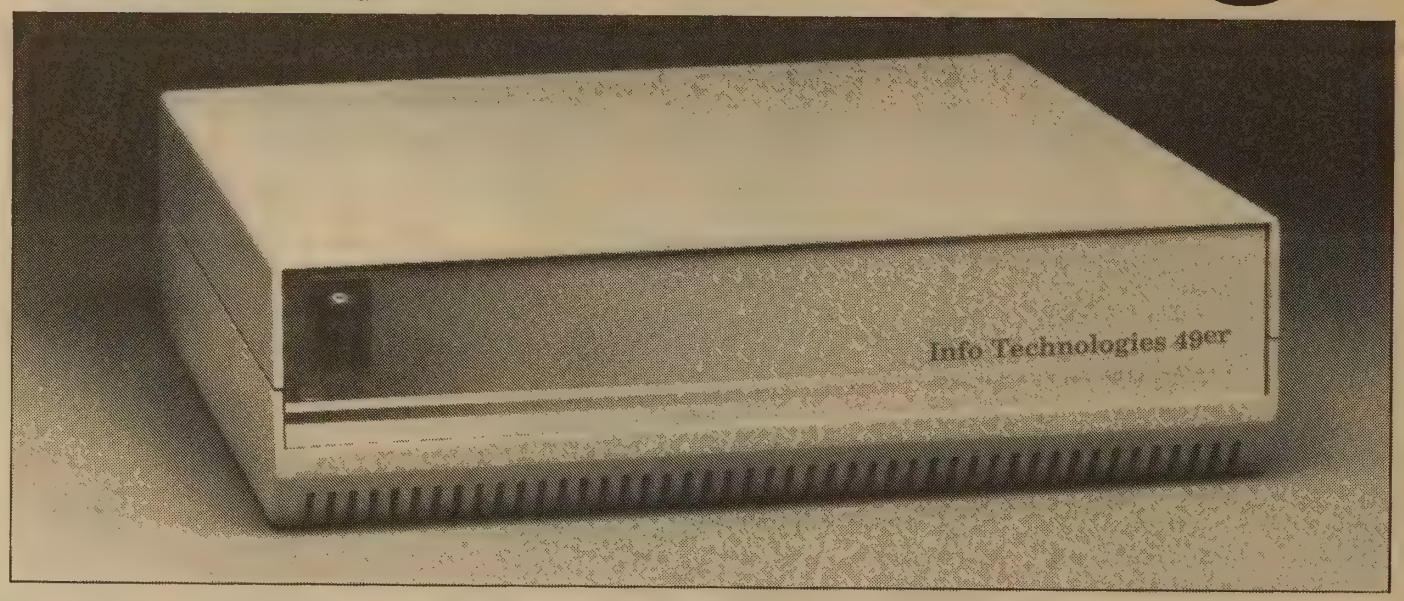

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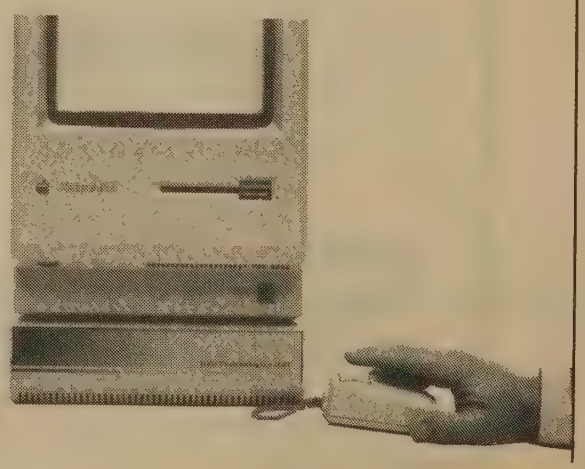

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store, programs that quickly backup information from a hard disk to floppies. *PC Tools* also supports IBM's PS/2 computer family and possesses an optionally resident DOS shell.

Channelmark Organizers

Three new programs allow users to organize address lists, easily produce columnar financial reports, and read a new product catalog containing several productivity utility programs. From Channelmark Corp. (415/345-5900) comes *Pocket Address Book*, which creates a handsome, pocket-sized book of all selected entries, as well as rotary cards, labels, and envelopes. This new program accepts data from other programs, as well. ($59.95). The second program is *Financial Reporter*, which automatically aligns columns, calculates math and adheres to the user's preset format for presenting figures. The program can accommodate as many as eight numerical columns and calculates up to five levels of subtotals in addition to the total. Data can be entered a column or a row at a time with as many as 200 lines in a single report. ($49.95).

Statistically Superior

Version 1.5 of *Stata*, statistical software from Computing Resource Center (213/470-4341) Includes maximum-likelihood logit and probit estimation along with Anova and Ancova estimation. It also supports both standards of EMS. The maximum-likelihood logit and probit estimation may be performed on individual or grouped data that can be weighted or unweighted as well as with continuous or categorical independent variables. Datasets can now be up to 8 MB and contain as many as 32,754 observations! *Stata*'s graphical features include many types of analysis graphics, such as scatterplot matrices and one way scatterplots, in additon to the typical representation graphics, such as bar and pie charts. ($590).

DAC Accounting Package

Dac-Easy Accounting 2.0 is the first of a new line of business software products from Dac Software (214/458-0038). The new versions have been completely re-designed in a new language for complete connectivity and performance and are priced at $69.95. The new programs include: *Dac-Easy Payroll 2.0*, *Dac-Easy Mate 2.0*, *Dac-Easy Report 2.0*, plus two *Tutor 2.0* packages for the Accounting and Payroll packages.

Data Defender

As the foolproof computer has yet to be invented, the next best thing is a utility package that can rescue virtually any form of lost data, including accidentally erased files, reformatted hard disks, and even RAM memory lost during power disruptions. Impossible, you say? Not according to Design Software Inc.(312/231-4540). The company claims that *DS Recover* can do just that, save your data. The program is easy to use and ensures that any erased file can be recovered at any time, even if other files have been subsequently written to disk. The program reserves disk space occupied by an "erased" file until the user intentionally purges that file at a later date. A "snapshot" option periodically saves RAM memory to a file on the hard disk. Users can set the RAM-to-disk transfer to occur automatically after a set number of minutes or keystrokes, or this feature can be requested explicitly at any time. ($49.95).

Also from Design are three other programs. The first is *DS Optimize*, a program that will optimize a badly fragmented 10 MB hard disk in eight minutes. This program can increase disk access speed ten fold. The second and third offerings are *DS Utilities* and *Survival Kit*, two-in-one bundled versions of the company's hard disk utility pack-

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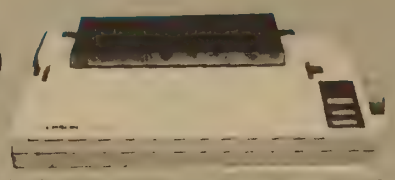

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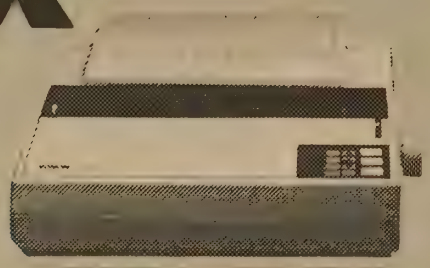

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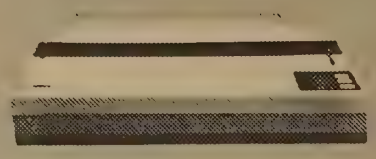

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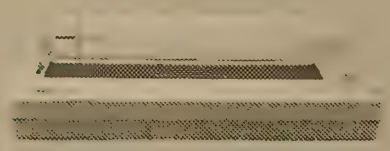

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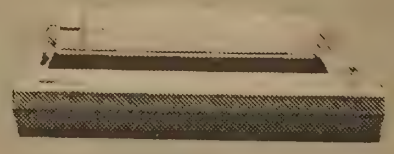

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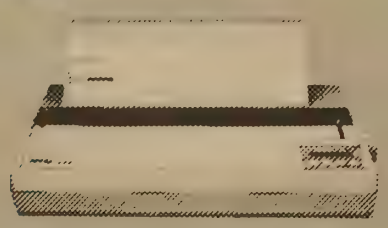

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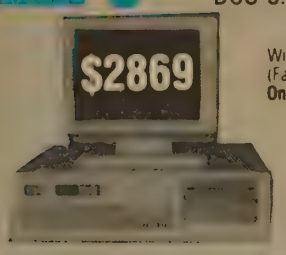

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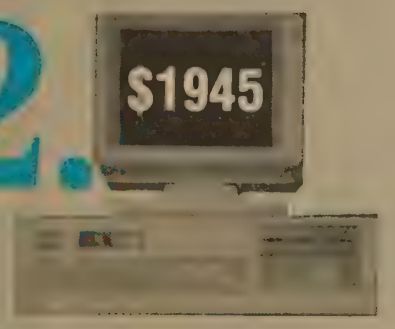

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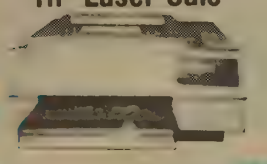

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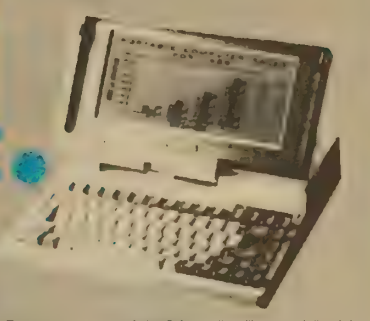

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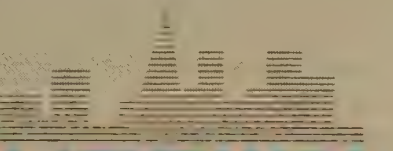

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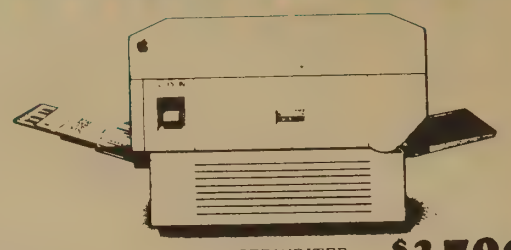

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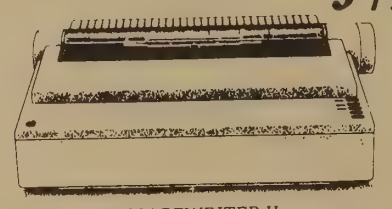

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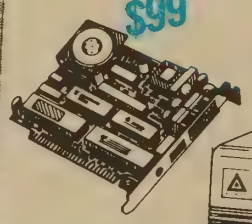

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ages. They are priced at $99.95 each. *DS Utilities* combines *DS Recover* and *DS Optimize*, while *Survival Kit* combines *DS Recover* with *DS Backup +*.

Disk Managers Are Now Unprotected

New, non-copy protected versions of *Diskette Manager Plus*, version 1.1, and *Diskette Manager II*, version 2.1, have been released by Lassen Software, Inc. (916/891-6957). The first program automatically reads the directory from each diskette and prepares a catalog with that information and the user-provided comments. Each catalog diskette may store information for as many as 200 diskettes. As the disks are read, labels can also be printed for them. The second program supports all of these mentioned features and also creates a relational database from the information stored on your catalog. You can find a specific file using DOS "wild card" searches and can cross-reference your diskettes in any manner you wish. ($10 and $20 respectively).

ZIP Coding Becomes Zippier

There are 38,000 ZIP codes used by the United States Post Office. Try to find the town of Smith without knowing the state it's in, and you could be searching your handy ZIP code booklet for hours. From Mellisa Data Company now comes *ZIP Code Facts*, a software-based database that contains the ZIP code, its corresponding city, state, county, type, latitude and longitude. This is a collection of facts on all of the ZIP Codes in the 50 states, District of Columbia and Puerto Rico and is intended to be used with a database program such as dBASEIII, Reflex or Rbase 5000. Information is included on 2700 post office boxes and 550 APO/FPO's as well. The database occupies over 5 MB of storage, so a hard disk drive is recommended. ($129). (714/770- 5570)

Compilers For XENIX

Microsoft has released the Microsoft BASIC Compiler for personal computers running the XENIX System V/286 operating system. With this offering, you can run programs written in the MS-DOS version of Microsoft BASIC and GW BASIC Compiler, as well as those written in Microsoft BASIC Interpreter for the XENIX environment, with little or no modification. Software developers will now find it far easier to port their MS-DOS applications to the XENIX multi-user environment, and compiled programs will run three to ten times faster than those created with the MS BASIC Interpreter. ISAM support is included.

Microsoft has also released updates of four other languages for the XENIX 286 environment: Microsoft BASIC Interpreter Version 5.41, Microsoft FORTRAN Compiler Verison 3.31, Microsoft Pascal Compiler Version 3.31 and Microsoft COBOL Compiler Version 2.2.

Upgraded Graphics

An upgraded *OfficeGraphics 2.0* from Office Solutions (608/274-5047) allows users to capture images created by such programs as *Chart-Master, Graphwriter, Lotus 1-2-3*, and others, and then insert those graphics directly into the company's word processing program, *OfficeWriter 5.0*. *OfficeGraphics* has been upgraded allowing it to edit existing images, to preview the image and text as they will appear when printed, and to move easily between programs while editing. With this new version, images can also be enlarged, reduced, rotated, boxed, circled, edited and positioned in text. If purchased prior to July 31, 1987, the price is $69. After that date, *OfficeGraphics* is $145.

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Lotus-Compatible Thesaurus

The most popular electronic online thesaurus for IBM micros and compatibles happens to be *Word Finder* from Microlytics (716/248-9150). However, the program previously couldn't be used with any Lotus product. That is no longer the case, as the company has now released a new version of *Word Finder, Version 4.0*, that fully supports all Lotus products and is also available on 3½" disks for the new PS/2 systems from IBM. Additionally, the program will be prepared for full compatibility with IBM's multi-tasking operating system, OS/2, when that environment is released next year. Additional enhancements include the type-in-a-new-word window feature, the correct replacement of the article ("a" and "an") along with the replaced word and the use of bullets to distinguish strings of synonyms with different meanings. ($79.95).

Desktop Publishing Releases

MACINTOSH

Second Spell Checker Upgrade

The second major upgrade of *Maclightning* has been announced by Target Software (305/252-0892). Two different versions are being released. The first, called *Mentor*, is identical to the original *Maclightning* product and is priced at $99.95. *Mentor* comes complete with an abridged version of the 100,000 word *Merriam Webster Ninth New Collegiate Dictionary*. The second offering, called *Mentor Plus*, retails for $199.95. *Mentor Plus* includes the complete *Merriam Webster 75,000 Word Pocket Dictionary* with definitions and is targeted for power word processing and desktop publishing applications. Spell checking speed has been increased to 140 words per second, and there is also network compatibility.

APPLE-BASED

Pumpin' Up PageMaker

The long awaited *PageMaker 2.0* has finally arrived. The desktop publishing package from Aldus (206/628-2352) is for the Macintosh. New features include automatic hyphenation and justification, kerning, the ability to work on longer documents, and the ability to interactively work on facing pages. There is also file compatibility between *PageMaker 2.0* and *PageMaker* for the PC. Higher quality scanned images can also be reproduced, and word processing source files can be updated through a new file export capability. Over 20 new features have been incorporated into this version, including the ability to support the gray-scale tag image file format (TIFF). There is simplified column-width resizing and a new "Select All" command for easier reformatting of entire columns, pages and stories. ($495).

Preferred Publishing Pac Premiers

For users of the DEST Scanner, a new version 1.1 has debuted of the *Publish Pac* from DEST Corp. (408/946-7100). The *Publish Pac* interface software for the DEST PC Scan Plus desktop scanner reads text, line art, and continuous tone images into desktop publishing and graphics software packages. With this new version, users can take advantage of the Mac SE's faster processing capabilities and larger storage capacity. Version 1.1 also offers image file formatting for *Adobe Illustrator*, and the software includes a *MacPaint* file option for storing images. The latest release also has a new algorithm for scaling halftones and line art, and allows users to manipulate the size and shape of images on the screen before they are stored in a *MacWrite* format. ($595)

PC-BASED

A New Window For Scanning

The importance of scanners in the development of appropriate documents for PC-based desktop publishing continues to increase as a normal purchase of such a system. One of the first scanner companies to offer graphics and optical character recognition that run with *Microsoft Windows* is Abaton Technology (415/463-8822). Scheduled to be shipping by late July of this year, the Scan 300/SF and Scan 300/FB are all Ricoh based scanners. The software includes *Wordscan* for

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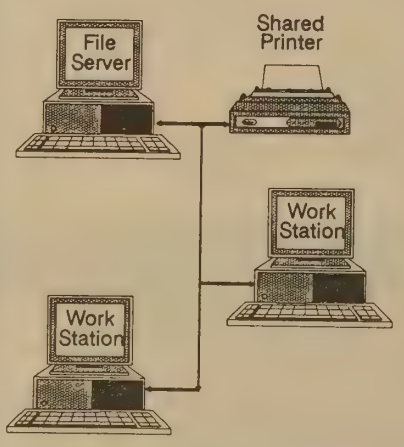

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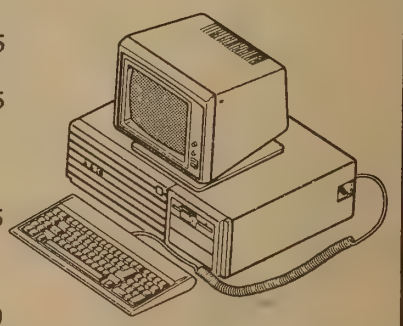

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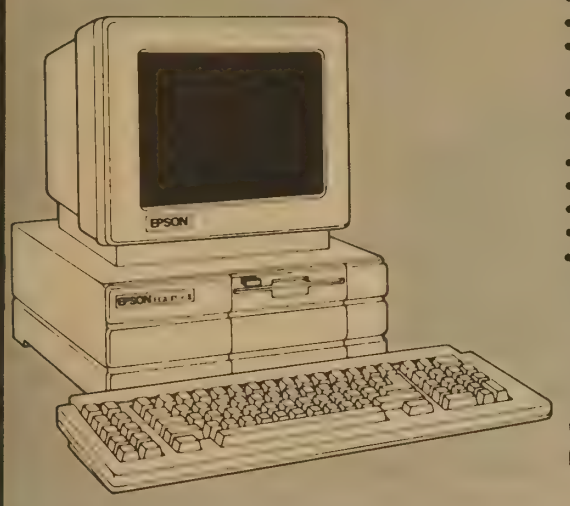

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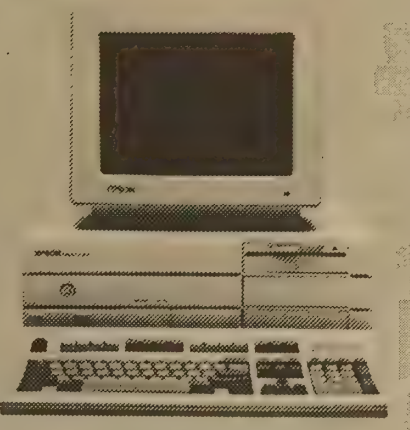

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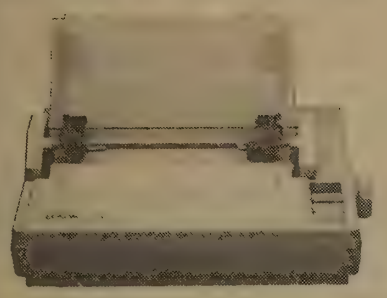

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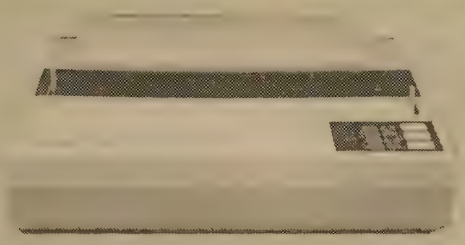
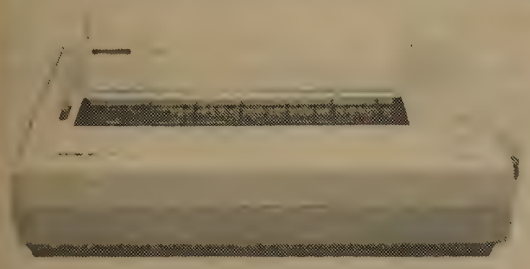


Epson® EX-800/EX-1000 Features

- Prints draft mode at a fast 300 CPS; 60 CPS in Near Letter Quality mode
- New Epson® SelecType II feature lets you choose from eight different typestyles at the touch of a button
- Versatile paper handling with Automatic Sheet Load and Push Feed Tractor
- Built-in parallel and serial interface
- One-year limited warranty

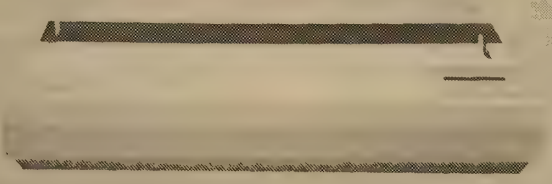
LQ800-$429
LQ1000-$599



Espon® LQ-800/LQ-1000 Features

- 24-pin printhead for high resolution output
- Prints 180 characters per second in draft mode; 60 characters per second Letter Quality mode
- One-touch fingertip selection of Letter Quality or draft print
- Built-in parallel and serial interface
- Built-in 7K buffer increases productivity
- One-year limited warranty

LQ2500-$879



Epson® LQ-2500 Features

- 24-pin printhead with high resolution output
- Prints 324 CPS in draft mode; 405 CPS ultra-high speed mode; 108 CPS Letter Quality mode
- One-touch font selection
- Advanced Epson® SelecType III LCD control panel
- Built-in parallel and serial interface
- One-year limited warranty

FX 86e-$306
FX 286e-$429

- Each is built with meticulous attention to detail
- Prints 240 characters per second printhead speed in the high speed draft mode
- Both are compatible with virtually every computer in your office
- With the optional 32K buffer you can store and print up to 16 pages at a time, while continuing to use your computer
- If your needs include printing of spreadsheets and financial reports, then choose the wide carriage FX-286e. Its 136 column carriage handles fanfold and ledger paper up to 16 inches wide. Or, for everyday printing needs, choose the standard width FX-86e. At eighty columns wide, it's perfect for word processing output

GQ3500-$1399
Laser Printer

- **Impeccable print quality**
  The GQ-3500 prints 300 dots per inch (dpi).
- And for business situations where pictures work better than words, the GQ-3500 offers graphics capabilities up to 300 dpi creating impeccably detailed illustrations.
- GQ-3500 will change fonts anywhere on the page you like. That's the kind of versatile simplicity your business demands.
- Optional IC font cards are available for special applications.
- Standard equipped with a parallel interface port, the GQ-3500 is compatible with almost every personal computer. You also have the option of choosing a serial interface for compatible encounters with serial systems in your office.
- Three built-in modes and two optional emulation IC cards provide an extensive range of software capabilities

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OCR operation, which supports 122 fonts, can read 6 to 14 point type, and is menu-driven. Picturescan runs under *MS-Windows* and operates at a resolution of 300 dpi. Additionally, 64 levels of gray scale will be increased to over 100 by year's end, with output to 1200 dpi phototypesetters also supported.

Nearly $900 Million In Desktop Publishing Revenues

According to Cap International (617/837-1341), the revenues generated from the sale of computer publishing systems, including hardware, software, turnkey system configurations, scanners, output devices and services, were just under $900 million in 1985. By 1991, CAP expects these revenue figures to increase to $5.6 billion. The market is segmented into two major components: corporate and commercial. The market is then sequentially segmented into additional application areas. The corporate market segment in 1985 accounted for 54 percent of the total revenues, but should account for 71 percent by 1991. No wonder nearly everyone is climbing upon the desktop publishing bandwagon!

Cordata Cracks Down On Pricing

Cordata's (805/375-1500) Desktop Printshop laser printers, Models LP-300 and LP-300X, have been reduced to $2,195 and $2,695, respectively. Also, the company has increased the number of disk-based fonts included with the system from 38 to 100. The Intellipress system is now priced at $8,995, and it comes in two versions: Intellipress/Ventura (includes *Ventura Publisher*) and Intellipress/PageMaker (includes Aldus' *PageMaker* for the PC).

Link To Lasers Improved

Full support for additional laser printers is always a welcome addition to a desktop publishing package. Now, Indigo Software (613/728-0016) has initiated shipments of IPrint—The Laser Office, which now includes support for: Hewlett Packard LaserJet Series II, the Hewlett Packard LaserJet 200 printer, the Epson GQ3500, the Okidata Laserline 6, the Kyocera F1010 and the Data South 1080. IPrint combines text, graphics, logos and scanned images on one page for documents of all kinds as well as presentation slides. It merges these forms automatically with information from database or accounting applications to generate the completed form. ($349.95).

Upgraded Publishing Package For All Manner Of Printers

LePrint 2.0 from LeBaugh Software Corp. (800/532-2844) incorporates many new features including; integration of graphics files, generation of lines and boxes, and the addition of foreign characters. This desktop publishing package addresses both dot matrix or laser printers and also offers users the ability to give double the printed resolution capabilities using the Tall Tree JLaser board to 600 by 300 dots per inch. Other featuers include the ability to position your materials anywhere on the page; control columns; preview documents in a WYSIWYG fashion, make multiple copies, and use almost any text editor. The type is style-based, not font-based, meaning that while there are 16 available type styles, there are virtually an unlimited number of fonts available to the user. ($175 for the standard package, $325 for an extended package that comes with 16 type styles. Type styles are also available individually for $60 per package.)

Publishing Package Enhanced

ProSoft (818/764-3618) has announced an enhancement package that upgrades *Fontasy Version 2* to *Fontasy Publisher*, adding such goodies as pop-up menus, a built-in text-file editor, automatic borders and improved file selection from alphabetized screen lists. These upgrades now allow the user to create or change text in any ASCII file while remaining in *Fontasy*. An expanded memory option also lets you take advantage of the memory available on such boards as the Above Board from Intel and the JRam/JLaser board from Tall Tree Systems. This addition allows you to compose full size pages and to use ProSoft's new and larger fonts. The *Publisher* enhancements are on a self-installing update disk that comes with a 32-page manual and cue card and sells for $29.95. You *must* have *Fontasy 2* in order to use this package. *The Fontasy EMS Option* is $49.95 and includes *Fontasy Publisher* and templates for both 24-pin and laser printers. This disk also requires *Fontasy 2* and two to three MB of expanded memory.

Conversion Capabilities Increased

Shaffstall Corp. (317/842-2077) has announced the release of 25 new conversion programs, including an Apple Macintosh 3½" converson program. The library now contains 760 formats and 14,000+ source/target conversion pairings. Among the latest programs are: Vector Graphics 5¼" CP/M, Adler Royal 5¼" CP/M, Tektronix 8" CP/M, Apricot 3½" MS-DOS 135 tpi; Burroughs ET2000 5¼", NBI 4000SC 5¼", Wangwriter I, II WP+, Wang VS, OIS, WP+, and Wang Alliance 250 Office Automation System.

Fancy Font Gets Fancier

Softcraft Inc., (619/944-0151) has released version 3.0 of its *Fancy Font* printing enhancement program. The program now lets users incorporate graphics into their documents, which can then be clipped to size, boxed, and magnified to taste. Vertical and horizontal lines can be drawn and you can select colors. Fonts licensed from Bitstream are also included. Fonts containing as many as 256 characters can be edited and printed. There is direct support for the Tall Tree JLaser device for full page 300 dpi printing with Canon- and Ricoh based printers. ($180).

Updated Version Of Laser Fonts

Also from Softcraft comes version 2.0 of *Laser Fonts*. *Word Perfect* and *WordStar 2000* users will find that this new version will automatically work with those word processing programs. This release also contains the Bitstream licensed fonts, which can be downloaded in portrait or landscape mode. Included with version 2.0 is the Softcraft-to-HP Font Conversion Program, which converts Softcraft fonts to the popular HP Soft Font format in portrait or landscape orientation. There are two font types available; low cost, good quality, bitmap fonts and typefoundry quality intelligent font outlines licensed from Bitstream. ($180).

Flaunting Their Fonts

From Wilkes Publishing Corp., (714/855-0730) comes *Alphabets*, a new font generation software program. You can create literally thousands of new fonts for use with such laser printers as: the Xerox 4045, 2700 and 3700; the Hewlett Packard LaserJet Plus and LaserJet II; and the Epson GQ 3500. It's for use with software programs that support either *GEM* or *Windows*. It also generates the complementary screen fonts and metric information for true WYSIWYG display. Four master type styles are included, and printer fonts produced by *Alphabets* range from five to 144 points. The included symbol editor can be used for the creation of special characters, custom graphics, logos, or additional master typefaces. ($195 which includes four type styles—additional typefaces are $95 each.)

Build Your Own Fonts

Publisher's Type Foundry is a new *Windows*-based program from ZSoft Corp. (404/980-1950). This package lets you create or capture type fonts, logos and special symbols, and then modify them. You can edit them to as little as one pixel resolution and then download them to laser printers and other PostScript devices. Operating like an infinite font cartridge, all previous limits on the typefaces, sizes and styles available for desktop publishing have been virtually eliminated. *Publisher's Type Foundry* consists of a bitmap editor, an outline editor, and conversion utilities that link the software to input/output devices. The program is also designed to work with the *PC Paintbrush* and *PC Paintbrush Plus* programs for *Windows*. ($495—for a limited time, the company will include a copy of *PC Paintbrush* for *Windows* at no extra charge!)

HARDWARE

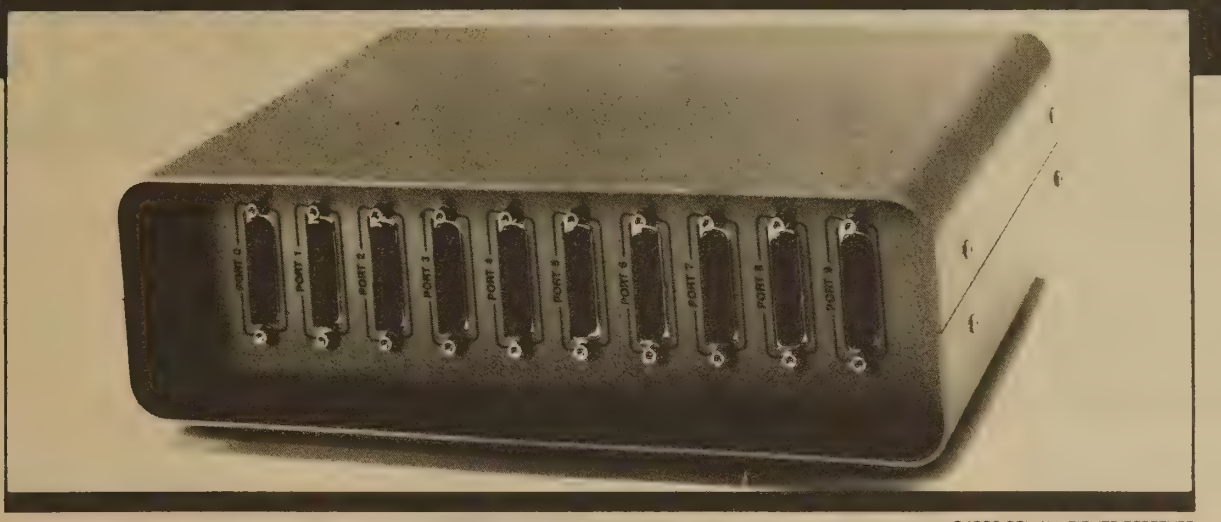
C.Itoh Debuts Its First Laser Printer

Operating at five ppm, the new Jet-Setter from C.Itoh (213/327-2110) comes with 512K of RAM, and is upgradable to 1.5 MB through optional memory acquisition. The printer has HP LaserJet Plus emulation and uses font cartridges compatible with HP's font combinations, which means the Jet-Setter can run virtually all of the popular software packages for IBM micros and compatibles. Additional cartridges are available for Diablo 630 and Epson FX-86e emulation. A library of 11 font cartridges will become available as options. The printer has two font cartridge slots and has a 100 sheet input cassette tray. There is an easy to use front control panel that alerts users when paper and toner require replacement. The printer is also the first to incorporate an organic photoconductor belt (OPC) rather than OPC drum technology. With this technology, the toner cartridge can be replaced independently of the OPC belt, which has a longer life. Centronics parallel, RS232C and RS422 interfaces are standard. ($1,795).

Plain Paper Printer With 400 DPI

Compugraphic Corp., (617/658-5600) is shipping an 18 ppm printer with 400 by 400 dpi resolution. This is a PostScript compatible plain-paper printer that is called the CGT 400-PS and was developed by Agfa-Gevaert N.V. of Belgium. The printer has a duty cycle of up to 100,000 pages per month and is the first implementation of the new Atlas Raster Image Processor (RIP) from Adobe Systems of Palo Alto. This RIP is the highest-speed implementation of PostScript on the market today. Other features include a user-accessbile 20 MB Winchester disk drive and 6 MB of internal RAM. Interfaces range from RS232C, RS422, asynchronous, AppleTalk and Centronics parallel. 73 fonts are standard.

PC PORT CONTROLLER



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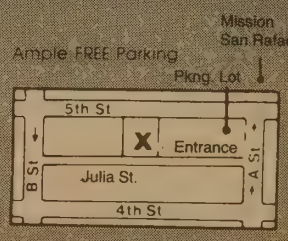


Screening For Macs

From Micrographic Images Corp., (818/407-0571) comes the Megascreen SE and Megascreen SE*M, large screen monitors for the Macintosh computer family. Both of these displays offer a 526 percent increase in workspace, simultaneous two-screen capability, and Megatalk, a free electronic mail program that runs on the Mac's internal monitor. The monitors are bundled with the appropriate interface card, detachable cable and *Megascreen System 7 Software*. No alterations to the computer's motherboard are required.

Megascreen SE has a user-definable resolution of up to 1024 by 900 pixels and Mac-standard 75 dots per inch (dpi) display for true WYSIWYG. The monitor can also accommodate an optional 12 MHz 68881 coprocessor. Megascreen SE*M has the same monitor, software and cable as the SE model, but ties-in the company's new Modular Expansion Interface Card. This card offers virtual second-slot capability for the Macintosh SE through clip-on Megamodules. Each module attaches directly to the interface card using a reinforced edge connector. MMVideo provides user-definable video capabilities, to include NTSC, PAL and external Mac standard signals. Megamodule Developer Kit allows users an easier way to access the SE's data bus through a 60-pin connector. ($1995—modules are $99.95 each).

OEM Scanner Available

Fujitsu America, Inc., (408/432-1300) has designed an image scanner for the OEM marketplace. The M3094A and M3094B units both have a standard flat bed for the reading of a single page, including a page from a bound document. The "A" model has an automatic document feeder than can handle up to 50 pages. Users can select the level of quality and speed by selecting 200, 240, 300 and 400 pixels per inch. Sixty-four steps of the gray scale are recognized. A dynamic threshold circuit is also available as an option. These units can complete letter-sized documents in just over two seconds. ($3,090 in OEM quantities of 100, with dynamic threshold circuit for $610).

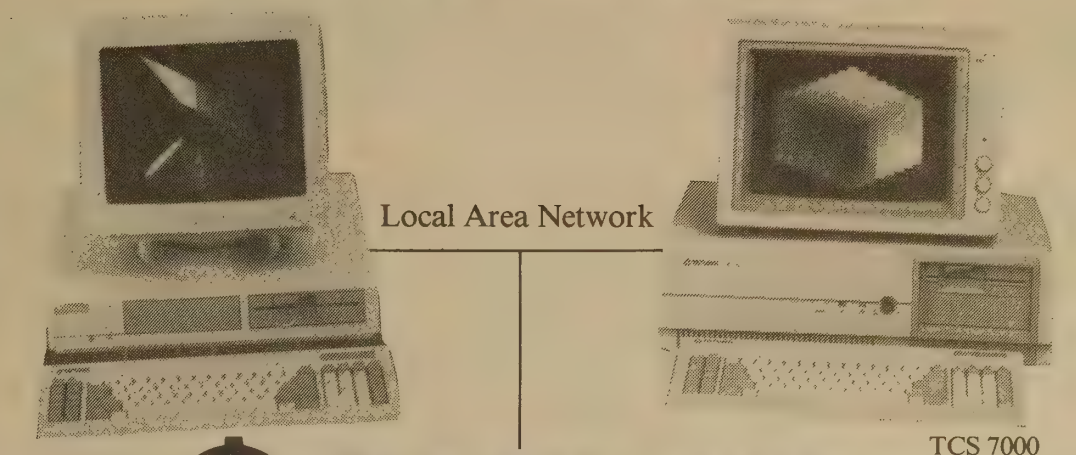
18 PPM Laser From Fujitsu

Designed to offer high speed and increased duty cycles for networking and multi-user environments, the new Fujitsu M3727MA is rated at 18 ppm and supports resolution of 300 dpi. The unit is designed to print 25,000 pages per month. The M3727MA is equipped with two 250-sheet cassettes, with an optional 1,000 sheet capacity hopper also available. There is a flat, straight-through paper path to reduce jams, and supports paper in legal, letter, A4, B4 and B5 sizes. The unit emulates Epson FX85, Diable 630, HP LaserJet Plus and HPGL 7475. The printer comes with the Fujitsu C1 business controller. Three IC card interfaces allow quick expansion of fonts, logos and signatures. Standard is 1 MB of RAM, with an additional RAM expansion to two MB available. Standard host interfaces are RS232 and Centronics parallel. ($7,650).

Upgrade Your LaserJet With DDL

The development of the DDL-based PC Publisher Kit has been completed by Imagen Corp. (408/986-9400). This offering consists of a raster image processor on a card that resides in your PC. This kit allows the HP LaserJet and other Canon

Make The Right Connection



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- 6/12 Mhz Switchable
- IBM PC-AT Compatible
- Expands to 1 Mb Ram on Motherboard
- 8 Expansion Slots

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- IBM PC-AT Compatible
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Color Monitor
Model Resolution
- CM-1360 640 x 200
- CM-1322N 640 x 200
- CM-1380F 640 x 350 IBM EGA Compatible
- CM-1376 640 x 480 IBM PGA Compatible

Mono Monitor
Model Resolution
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- MM-1422 800 x 350

Terminal
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- TVT-7261 ANSI-ASCII Terminal

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Karl Koessel **PC World**
December 1986

Software Compatibility

Xenix, AutoCad, MSDOS, PC DOS, Novell Network, dBASE, Lotus, Sidekick, Symphony and others...

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CLUB 286 8MHz Mono System $995

- Basic System Features Plus
- Fully Configured and Tested
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- Capable of Mono, Color and EGA
- IBM Quality Monitor (EGA/CGA), 14" Nonglare Screen

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- Video Adapter with Printer Port
- A High Resolution IBM Quality 800 x 350 Monochrome Monitor
- 2 Serials, 1 Parallel Port /• Wait State Insertible Slots
- 8/10 Keyboard Selectability /• 12MHz Thruput

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- Basic System Features Plus /• 80286-10 CPU
- High Resolution 16 Color EGA Card with Mono and RGB Output
- High Resolution EGA Monitor, 14" Nonglare IBM Quality
- Wait State Insertible Slots /• 2 Serials/1 Parallel Port
- 8/10 Keyboard Selectibility /• 12MHz Thruput

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DBASE III XENIX
NOVELLE

Features:

- 8088-2 4.77/8MHz
- 640K on Board
- 8 Slots
- 135 Watt Power Supply
- Serial/Parallel Port
- Floppy Controller
- 360K Floppy Drive
- Keyboard AT Style

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SYSTEM WITH HIGH RESOLUTION
GRAPHICS CARD AND HIGH RES MONITOR

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With 65ms 20MB Drive

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'Run Hercules Graphics'

- High Resolution
- 12" Nonglare Screen
- 800 x 350 Resolution

$138

IBM Quality Monitors **$345**

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- 640 x 350 Resolution 16 Colors
- 640 x 200 Resolution 4 Colors
- FCC Class 'B' Approved
- EGA and RGB
- Auto Switch

$480

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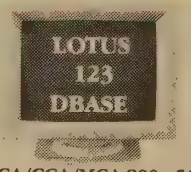

- EGA/PGA/CGA/MGA 800 x560 Maximum
- Plug and Play (All Cables Included)
- 14" Nonglare Screen
- Swivel Stand
- NEC 2 Year Warranty

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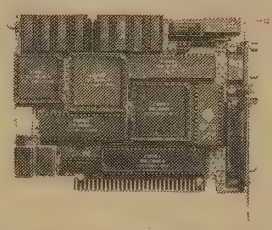
DELUXE MICRO EGA



Model 30 Compatible

All New

- 800 x 350 132 Columns Mono
- Software Switchable
- Parallel Port
- TTL Port
- 640 x 300 CGA
- 720 x 348 EGA

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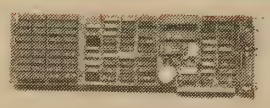
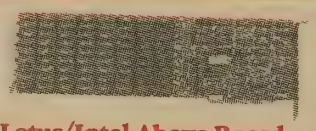
MULTI I/O EMS



- Fits Lotus/Intel/LIM/SIM Specs.
- Expanded Memory Board
- 1 Serial (2nd Optional)
- Installation Software
- Upto 2MB Capacity
- Clock (for XT)
- For AT/XT
- Parallel Port
- Game Port

$159

CLUB EMS FOR XT



Lotus/Intel Above Board Compatible

- 0-2MB Expansion Memory (OK)
- Installation Software
- Model 30 Compatible
- Fits LIM/SIM/EMS
- For PC/XT/AT
- Made in U.S.A.

ØK **$99**

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16 Bit Bus

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- LIM/SIM/EMS Specifications
- For IBM AT and Compatible
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- OS/2 Applications
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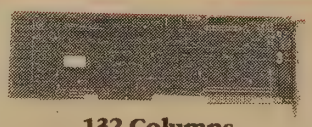
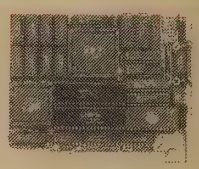


132 Columns

- Monochrome 132 x 44 Display
- Evergraphics from Everex
- Hercules Graphics
- Software Selectible
- Printer Port

ØK **$99**

MICRO EGA

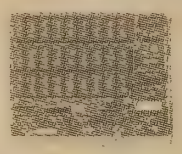


- Monochrome Hercules 800 x 350
- EGA 16 Color 640 x 350
- CGA 4 Color 640 x 200
- FCC Class 'B' Approved

$179

CLUB 576

(for PC/XT and Portables)

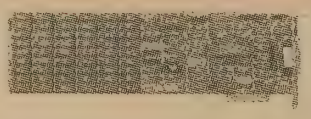


- Upto 576K can be Installed
- Supports 64K/256K DRAM
- Installation Software
- Short Card
- Made in U.S.A.

ØK **$55**

CLUB 384

CLUB 384 for PC/XT

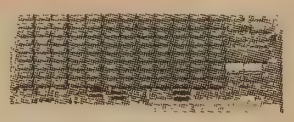


- 0-384K Memory Expansion
- Installation Software
- Serial Port
- Clock/Calendar
- Parallel Port
- Game Port

ØK **$88**

3MB CARD FOR AT

For XENIX, UNIX, OS/2



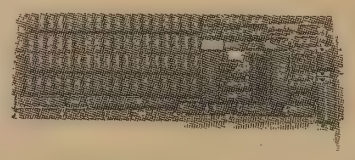
- Used as Ramdisk/Printspooler
- No Piggy Back Required
- Split Memory Addressing
- Installation Software
- 64/256K Back Fill
- 0-3MB Capacity

ØK **$155**

MULTIFUNCTION CARD FOR AT

Manager's Choice

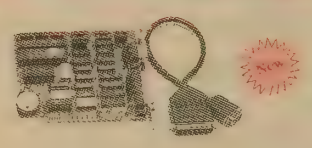
For Xenix/OS/2/Unix/Ramdisk, Printspooler



- Printspooler/Ramdisk Software
- Serial Port (2nd Optional)
- 128K Increment Range
- Back Fill Motherboard
- Installation Software
- Parallel Port
- Game Port

ØK **$179**

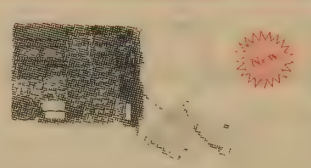
I/O & GAME PORT



- Serial Port (Two Optional)
- Software for Installation
- Game Port (optional)
- Com 1, 2, 3, 4, Addressing
- Half Size Card
- Clock/Calendar

For XT $75

I/O & GAME PORT



- Serial Port (Two Optional)
- Com 1, 2, 3, 4 Addressing
- Game Port (optional)
- Software for Installation
- Half Size Card
- Clock/Calendar

For AT $75

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Autocad/Windows/PC Paint

Free DR. HALO

- Mouse Systems Mouse
- 200 Dots/Inch
- Laser Driven
- 3 Buttons
- Serial Mouse

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Model 5339
as in Model 30, 50, 60

- Separate Cursor and Numeric Pad
- 12 Function Keys
- 101 Keys
- IBM Click

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- Accelerate Your PC/XT to AT Speed
- Runs 80287 Math-Processor in 5MHz or 8MHz Speed
- Runs 7 times faster than PC or 33% faster than the IBM AT
- 80286 CPU
- w/128K RAM

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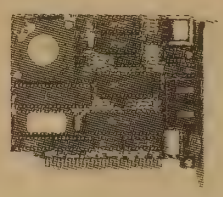

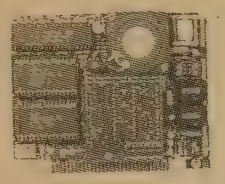

- Bitcom Software (Smartcom, PC Talk Compatible)
- Auto Dial, Auto Answer, PC Dial
- Fully Hayes Compatible

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- Glossy Manuals, Compuserve Information
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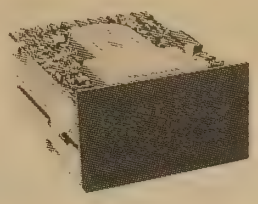

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- Auto Head Parking
- Plated Media
- Novelle Compatible
- Unix Compatible

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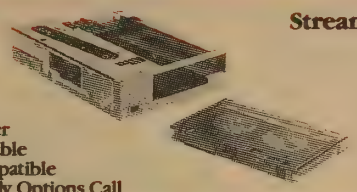

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- Glossy Manual
- User Friendly Software
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- 20, 60MB Cartridge Available
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120MB		

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Superb Packaging! Superb Pricing

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- Protective Packaging
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30MB	$345	
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For 20MB and 40MB System a Floppy Controller is Available ADD $50

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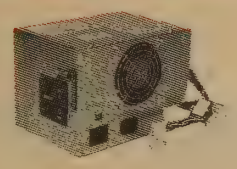

- FCC, UL, TUV Approval
- 5 Output Leads
- 135 Watt for XT — Price for XT **$85**
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- 5A, High Power — Price for AT **$140**

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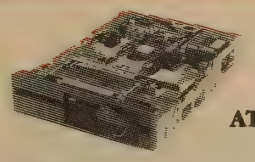

For AT/XT/PC

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- Teac or Fuji
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- Grey Face Optional
- Mounting Brackets
- Mounting Rails Optional

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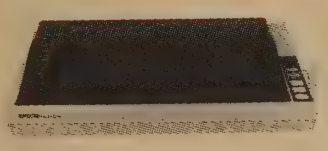

- 9 Pin 240 CPS
- Easy to use Front Panels
- Letter Quality Print Out

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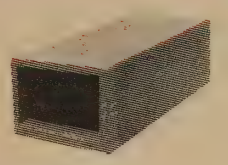
CHASSIS



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- Can Hold on Full HT Drive
- FCC Class 'B' Approved
- 40 Watt Power Supply with Fan
- Power Cord Available

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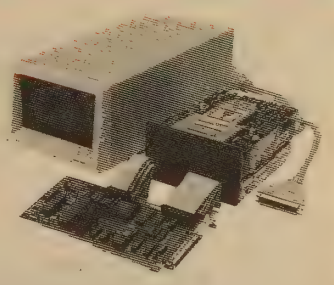
Fully Packaged with everything you need to plug and play



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20MB 39ms ST4026		
30MB 39ms ST4038	CALL	
40MB 39ms ST451		

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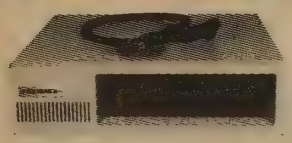
Add 7 More Slots to Your PC or XT!



- 8 Slots (0 Wait State)
- 135 Watt Power Supply
- Shielded Cables
- Asynchronous Communication Card
- Diagnostic Software
- XT Size, Shape and Look

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Seagate 257	$535
1.2MB Floppy	$105
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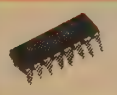

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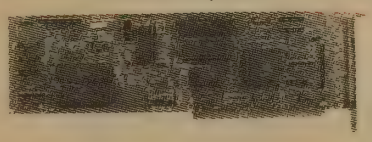
For XT/AT



- Software, Manuals Included
- Control 2 Floppy Drives
- Control 2 Hard Disks — For AT **$170**
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- MFM Incoding Logic — For XT **$140**

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80287-6, 8, 10 Coprocessors	$199/$235/$299
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Y Cables	$8
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Eproms 2464, 27128	CALL
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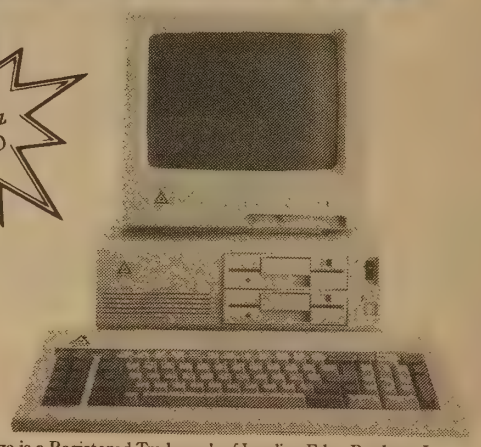

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Providing typeset quality output with an image resolution of 600 dots per inch, twice that of standard 300 dpi laser printers, Varityper (800/631-8134) has released the Varityper VT600 laser printer. Under a licensing agreement with Adobe Systems (415/852-0271), Varityper will also be manufacturing the PostScript interpreter for the VT600. The printer can produce exceptionally crisp line art as well as typeset quality text on plain paper. With a rated speed of 10 ppm, the unit also has a 20 MB hard disk drive that can support other typefaces to complement the nine PostScript-compatible typefaces already resident with the system. The printer is compatible with the Apple Macintosh and uses a 68020-based 32-bit raster image processor (RIP) to provide exceptional performance.

New Laserwriter Bins

BDT Products (714/660-1386) has introduced the three-bin Laserfeeder and six-cassette Multifeeder for the Apple LaserWriter and LaserWriter Plus printers. The former expands the system's paper handling capabilities to three paper bins totalling 500 sheets of paper (and three paper types) and one envelope bin for 40 to 60 envelopes. The latter creates a laser print station that supplies seven individually selectable cassettes for automated paper or envelope feeding. With each product sold, the company provides a disk containing a specialized driver for the Macintosh/LaserWriter system. ($1,695 and $4,995, respectively).

Large Screen Monitors For The SE

Laserview Display System from Sigma Designs (415/770-0100) is a high resolution monitor/display system for the Mac SE. A15″ and a 19″ version will be available. The 15″ version provides a resolution of 1664 by 1200 pixels and is priced at $1,795. The 19″ version is priced at $2,295. The system consists of a high resolution adapter board and a paper-white phosphor screened monitor. There are four cursor sizes, two system font sizes and a screen save feature for the active screen. The scan frequency is 75 KHz, and the refresh rate is 60 Hz, in non-interlaced mode.

Graphics Support For The Present And The Future

A multiple high resolution EGA adapter that not only supports the current graphic modes (EGA, CGA, MDA and HGC), but also the new IBM VGA standard, has been introduced by STB Systems, Inc. (214/234-8750). Called the Multi Res II, the adapter can not only be used in current IBM micros, but also in the IBM PS/2 Model 30. The adapter drives a wide range of monitors, including EGA, multifrequency, 25 KHz and monochrome. For display of desktop publishing programs on EGA monitors, this board generates an 832 by 350, 16 color resolution. ($449).

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On The Firing Line

The WYSEpc Line— Designed For Superior Performance

By Stephan Wickham and the Diamond Software Technical Team

Now you can learn the big secret about which machines Diamond Technical uses—which are, incidentally, made by the same company whose machines Microsoft uses.

We would like to share with you information on a line of computers which are, in our opinion, state-of-the-art and possibly the best value in the industry. These new computers allow customers to easily upgrade performance or change to different processors by replacing plug-in cards that contain the central processing unit. This new family of computers is based on Intel 80286 and 80386 CPUs, and their fully modular architecture provides an extremely flexible line of high-performance computers. These computers unquestionably offer a range of features, system price and performance unavailable from any other single computer manufacturer.

And now—the new Wyse computer product line.

Superior Design

The modular architecture of the new group of computer systems features a passive backplane design with the entire main system board mounted on a plug-in card. This is the same method used to build larger computers such as DEC PDP-11 minicomputers. At the same time, complete compatibility is achieved in the bus structure for the current and future crop of AT-type add-in boards. In addition, the passive backplane design allows for very quick diagnostic testing and service. It is easy to look at design features that cater to a fully-functional brand new unit, but manufacturers in the past haven't always made much effort to design units that are serviceable. The entire new Wyse line is easily maintained, for those rare occasions when the machines actually need service.

On the front of each system is a Wyse-designed 16-character liquid crystal display called the WyseWindow that shows system status. On the WyseWindow you will see the date, time, CPU speed, disk access activity indicator, system performance and additional system messages. Users can also custom program messages through a special optimized MS-DOS. It is also possible for Wyse users to customize their machines through style kits that include a desk stand, cable cover and colored control buttons (available in primary or pastel colors).

The new machines all include an enhanced MS-DOS 3.2 operating system with a number of new software features. Software emulation of the Lotus/Intel/Microsoft (LIM 3.2) Expanded Memory Specification (EMS) and AST Enhanced EMS allows applications to cross the 640K wall that DOS places. As far as we know this is the only available way to have AST's EMS running at 12 to 16 MHz and it offers benefits not found in the LIM EMS. Users will also find disk-caching software that can increase performance with some disk-intensive software packages by up to 40%.

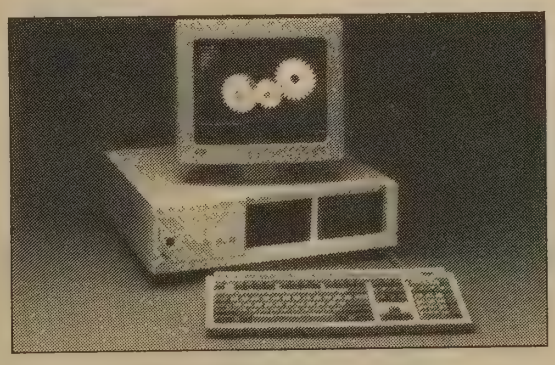
You can also rest assured that the new computers will run MS OS/2 when it comes out, as Wyse is working very closely with Microsoft on operating system compatibility.

A software security system will allow you to prevent unauthorized users from accessing your system, even if the Wyse machine is processing data. This feature is great if you are working on a project that requires a lot of processing time, as it makes certain that the work can't be interrupted, even if you should leave the room.

The new Wyse systems include a floppy diskette/hard disk controller, a real-time clock/calendar with battery backup, one serial port, one parallel port, enhanced AT keyboard and an 8-MHz compatibility mode. The WYSEpc 286 Model 2108 comes standard with 512K of RAM; all the other models come with 1 MB of RAM.

Math coprocessor support is available for all the WYSEpc 80286 machines, it can improve your calculating speed by up to 50%. The WYSEpc 386 supports both the 80287 and 80387 processors, unlike the early Compaq 386 machines that were limited to using just an 80287 coprocessor. The WYSEpc 386 will address a 80387 coprocessor at 16 MHz, which will optimize the calculating speed.

All the new machines are built to international standards that meet regulatory requirements and provide foreign language support. These machines are built tough and are made to last. The same high quality available in the original WYSEpc 286 model 2200 is evident in the new Wyse family with the addition of higher technology design and probably the nicest looking cases of any machine.



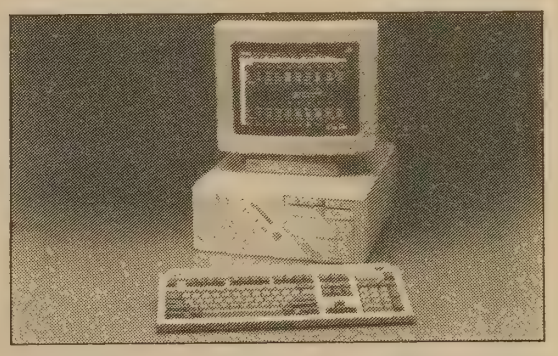
The WYSEpc 386

The pride-and-joy of the Wyse line is the powerful WYSEpc 386 Model 3216, which has a 32-bit 80386 processor running zero-wait-state memory. It is compatible with current IBM PC and IBM AT software. This fine machine provides nine expansion slots and can access up to 44 MB of RAM. The 32-bit memory is run through a unique top-bus to provide fast access. The WYSEpc 386 is also rather novel in that system memory is a combination of two-way banked interleave and static column RAM. This offers the highest performance at 16 MHz of any 386 machine. Five half-height 5¼" devices are accommodated on shelves and four of the devices are accessible through the front panel cut-out.

The WYSEpc 386 will find wide use as a high-performance network file server, multitasking/multiuser processor, desktop publishing processor and CAD/CAM engine. Also there will be more than a few machines used by "power-users" for developing monster applications.

The WYSEpc 286s

There are three new models of WYSEpc 286s. The WYSEpc 286 Model 2108 is a small footprint (15" × 16.6" × 6.2") machine designed to be used for general business applications. It features an Intel 8 MHz 80286 CPU, seven full length IBM



AT slots, three half-height drive shelves for 5¼" drives and a 190-watt power supply. The system comes standard with 512K RAM.

The next step up is the WYSEpc 286 Model 2112, which has the same small footprint. The processor used is the Intel 12.5 MHz, switch selectable to 8 MHz This machine is appropriate for users running large spreadsheets, database or desktop publishing. The Model 2112 comes standard with 1 MB RAM and has the same other features with the Model 2108.

The top of the 286 line is the WYSEpc 286 Model 2214, which has a large footprint case with nine expansion slots. The processor runs at 12.5 MHz using zero-wait-state memory and is switch selectable to 8 MHz. There are five half-height drive shelves and a 220-watt power supply. The machine comes standard with 1 MB RAM. The Model 2114 is appropriate for CAD/CAM, publishing, network and multiuser purposes.

In August Wyse will be offering 3½" diskette drives and 100% VGA capability. At the same time Wyse will have a line of monitors optimiized to work with the new graphics standard.

Prices And Availability

List prices on the systems are as follows: Model WY-2108 $1,599; Model WY-2112 $2,299; Model WY-2114 $2,799 and Model WY3216 $4,999. Your questions about the current availability and shipping dates can be directed to Diamond Software's sales department at (415) 633-2588. Diamond Technical is here to serve you with your technical considerations on these and other fine products at (415) 633-2589. □

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Clone Makers Undaunted By PS/2

By Robert Beauchamp

Steve Hamilton, PC-Tech distributor:

"Any time IBM comes out with a new piece of hardware, it provides new opportunities."

Roger Hatfield of Club AT:

"We offer the same speed as their six grand machine. But even fully loaded ours is only $2,000. Why pay the extra $4000? That's what people are looking at now."

Jerry Bower, product manager at AST:

"We are not overwhelmed at all by the capabilities of the new system. The packaging and manufacturing are quite well done, but there is no real innovation in performance other than a moderate innovation in graphics."

When IBM introduced its new Personal System/2 computers, one might have expected the makers of clones and compatibles to be sent into a panic at its somewhat proprietary nature.

With PS/2's top-secret insides and a micro-channel bus that no one else had, along with a brand new operating system all its own, dire predictions of financial doom were given for those who had been successful at giving you the same thing IBM did, only cheaper.

PS/2 was said to be the ultimate fear of all clone makers: a new, un-copyable, standard.

If clone and compatible makers and dealers were daunted, however, by the actions of IBM, they wouldn't be clone and compatible makers and dealers.

Consider Steve Hamilton, a distributor of PC-Tech computers. He says, "Any time IBM comes out with a new piece of hardware, it provides new opportunities." And the "new opportunities" he's talking about are found in the same area they have always been found: the huge profit margins attached to IBM hardware. The clone makers, he says, will continue to offer more features at a significantly lower price. Now they simply have a wider variety of hardware to sell and higher prices to undercut.

The other great fear with the release of PS/2 was that the clone manufacturers and dealers would be left out in the cold as the market would demand the new IBM standard. Since there was such secrecy surrounding the new machines, it was felt that the clone makers couldn't copy it quickly enough and sales of their current machines would fall flat.

Nothing could be further from what actually happened, according to James Wong of Multi-Tech. "We have seen no negative effect on our business. We are still selling as many as previously, and business has actually picked up. There was a slowdown due to anticipation, but now sales are even better than before."

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David Kay of Kaypro:

"PS/2 computers, at least the desktop versions, are fairly easy to compete against."

David Kay, president of Kaypro, agrees. "Besides putting questions into people's minds, there has been very little effect that we can tell."

"A surge in business" was noted by Steve Hamilton. "People who were holding off waiting to see what IBM would release are now buying. A lot of apprehension over what would come from IBM has been released."

Zahid Ali of Stanford Systems offers this explanation for the lack of impact on clone sales: "The people that come in have already made up their minds as to what they want and how much they want to pay."

Roger Hatfield of Club AT also feels that price is an important factor. "We offer the same speed as their six grand machine. But even fully loaded ours is only $2,000. Why pay the extra $4000? That's what people are looking at now. They're saying, I can get the same thing cheaper."

It has been said that IBM introduced its new system to capture the Fortune 500 market. Can clone dealers and manufacturers go head to head with the new IBMs, or are they going to resign themselves to meeting the needs of "everyone else"?

Hamilton has this view. "I think the release won't affect the clone industry as much as the compatible industry. People who are going to buy a clone will buy a clone. But for something like a Zenith the situation is much more competitive."

David Kay, however, feels that "PS/2 computers, at least the desktop versions, are fairly easy to compete against." He cites the lack of expandibility and the power supply as weaknesses in the PS/2 computers.

Jerry Bower, product manager at AST, says: "We are not overwhelmed at all by the capabilities of the new system. The packaging and manufacturing are quite well done, but there is no real innovation in performance other than a moderate innovation in graphics."

Another area clone and compatible manufacturers feel they have an advantage in is in the production of 80386 machines. According to Hamilton, "As far as the 386, there has been no advantage that that IBM has presented. We are hoping, however, that IBM may give us a standard for the 386. The other manufacturers have failed to do this." Jerry Bower also states that there is interest in a standard architecture.

When you talk to clone dealers, they stress high speed at a low price. IBM, however, seems to be stressing features such as enhanced graphics, the proprietary micro-channel architecture and a new operating system.

This has not escaped the clone and compatible manufacturers, who know that the "same speed/lower price" approach won't last forever, at least if they hope to survive.

James Wong says, "We're going to keep a good close eye on the market and see what attributes of the new system are being accepted by the corporate users. This is what will be incorporated into our machines."

Bower says AST will also be keeping a close eye on the market. "Things may change. We're waiting for our customers to tell us what they like about the new system and what they are willing to commit to. We won't be sure about this for the next month or two. We have no changes planned now, but we will be open to changes."

Kay is more specific about his company's plans. "We've been studying the new video. We'll move to that video if it seems a popular way to go and if software is configured to that system. We can already incorporate 3.5" disk drives." Dealing with the micro-channel, according to Kay, is "years away, and will come after incorporating any operating system which has yet to be released."

Much of PS/2's new system (OS/2) has yet to be released. According to Bower, PS/2 is heavier on promises than performance. The 386 machine and the new operating system have yet to be seen. He says, however, that "IBM's hand has been played. This is long term strategy for them. They'll stay with this for three to five years. There is a lot of commitment."

If conventional wisdom were to prevail the clone manufacturers and dealers would give up the high end corporate market to IBM. But if clone makers and dealers were conventional they would be working for IBM.

It is not only apparent that the Personal System/2 computers have not stunted clone sales, but also that clone and compatible manufacturers and dealers have no intention of relaxing the competition. Kim Chan of Tatung says, "We are making a lot of preparations. We are looking seriously into the PS/2 market."

Roger Hatfield sums up the attitude of the clone and compatible manufacturers and dealers when he says "IBM PS/2 is for those people who think they need to buy a name brand. But we're telling them that in reality they don't!" □

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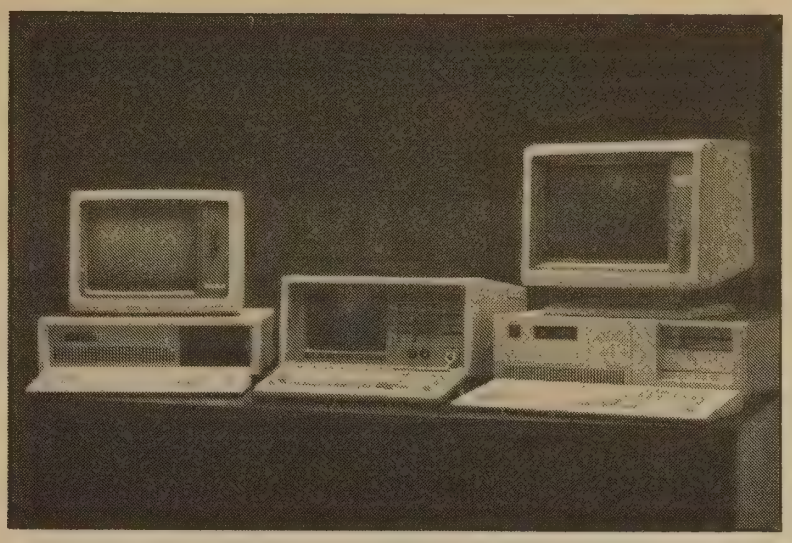

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The 80386 Microprocessor installed in PPM-386 Sprint runs at 16 or 20 MHz. Advanced 32-bit architecture of the 80386 microprocessor delivers increased performance with today's software. It delivers '100,000 minicomputer level performance, which expands the potential of future application such as CAD/CAM, Desktop Publishing, Artificial Intelligence, and multiuser environments. The PPM-386 Sprint can execute all software written for the PC, XT, and PC-AT.

Processor: 16-MHz 32 Bit Intel 80386: Socket for 80387/80287.
I/O Bus Expansion: 2 = 32-Bit, 4 = 16-Bit, 2 = 8-Bit.
Memory: 512 K Bytes of 32-Bit Interleved RAM; 32K Bytes of Phoenix BIOS ROM (Expandable up to 16MB RAM).
Mass Storage: 1.2 MB floppy disk drive; 44 MB Hard Disk with 28-ms access time (44.72, 120MB Optional).
Keyboard: 101-Key IBM RT-Style Keyboard with separate numeric keypad, cursor keys, and 12 function keys.

I/O Interfaces: RS-232C Serial port with male DB-25 Connector; Parallel Port with female DB-25 Connector.
Documentation: User's Manual/Setup Software.
Operating System: DOS 3.2, PC-MOS/386, UNIX, XENIX (Optional).

Options: 60MB tape back-up
32-Bit-2 MB Memory card w/2 MB RAM
32-Bit-4 MB Memory card w/4 MB RAM
32-Bit 8 MB Memory card w/8 MB RAM

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PC—TECH MPC/286 6/8/10/12*

The **PC-TECH MPC/286** personal computing system provides increased IBM-AT compatible computing power, performing 50% faster than traditional 8 MHz AT's. Ideal for general business use, the MPC 286-AT also serves as an extremely powerful engine for applications-oriented workstations, both stand-alone and shared, including desktop publishing business graphics and CAD/CAE. Its design also includes support for increased connectivity and access to shared information as a local area network file server, to manage multi-user environment or as a cluster controller in shared mainframe or minicomputer connections.

- 10 MHz 80286 system unit with zero wait state operation, runs popular IBM—compatible software 50% faster than the 8b MHz IBM PC AT for true productivity improvements, even for the most demanding user.
- Advanced coprocessor socket accepts 10MHz 80287 devices. When configured with coprocessor MPC/286 accelerates mathematics-intensive programs including Lotus 1-2-3 Release 2 applications, Autocad and Versacad.
- 640K RAM with parity checking up to 1024 K on board, 16MB w/expansion card.
- Keyboard-selectable operations at 10 or 6 MHz the ultimate in software compatibility
- Advanced architecture allows incorporation of four asynchronous serial communication ports and one parallel port standard on the motherboard. Only 36 chips on the CPU with the implementation of VLSI (Very large scale integration) technology.
- Eight expansion slots 2 = 8-bit/6 = 16-bit bus.
- Real time clock/calendar provides time and date stamp.
- High capacity 1.2 MB floppy drive standard. (360 Kb optional).
- Choice of 20, 30, 40, to 120 megabyte harddisk drive (optional).
- Optional internal tape unit for rapid back-up of full 20 to 60 megabyte of data on a single tape cartridge.
- Ergonomically designed, the 101 key, low profile keyboard features a separate numeric keypad, dedicated cursor control, and extra function keys.
- Compatible with wide variety of operating systems, such as PC-DOS, MS-DOS, XENIX, UNIX, Multilink advanced, and other versions of Concurrent Dos.
- Compatible with available multitasking and task switching software packages, including Microsoft Windows, Deskview and Topview.

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P-286 Targa is a powerful and versatile portable personal computer that combines Japanese quality, uncompromising capabilities and lightening speed. Reliably engineered, this system provides for exceptional versatility and upgradeability. P-286-TARGA is the smallest and the fastest portable AT compatible computer in the industry.
Processor: 80286-10 MHz (6/8/10). 0/1 Wait state
Memory: 640K of RAM up to 1024K (or 16 mb).
Mass Storage: 1.2 mb floppy disk drive. (360k drive optional).
20 mb hard disk, 40, 80 mb 30 ms. (optional)
20, 40 mb tape back up unit (optional).
I/0 Devices: 1 Serial RS-232 Port.
1 parallel Port.
I/0 Expansion: 4 Expansion slots open.
Monitor: 9" Non glare High Resolution Monitor. Choice of Amber, Green or Paper white.
Documentation: Users manual. Dos 3.1. Setup Software.

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PV-20 TARGA (Portable)

PV-20 TARGA gives 100% IBM compatibility in less than 28 lbs in a high powered rugged computer. Features an NEC-V20 fast processor giving you twice the speed of Compaq portable IBM XT or equal, 640K memory, 360k floppy drive, 9" anti glare screen RGB. Serial, Parallel ports. Smaller than Compaq portable.

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The feature packed model is based on an Intel 8088-2 or NEC-V20 running at 4.77 or 8 MHz. The standard system has a 0/1 WAIT STATE on memory and operates 200% faster than IBM-XT. 640K RAM memory on board, 360 kb floppy drive, Eight expansion slots. AT style keyboard, 150 watts power supply, Clock/Calendar, Serial, Parallel & game port.

$595

Special Book Excerpt

How To Upgrade An Old IBM Personal Computer

By Aubrey Pilgrim

There are thousands of genuine IBM computers out there that are obsolete. This includes the original PC, the PC-XT and the PC-AT. These computers may have been the latest state of the art when they were sold, but if they are more than a month old, then there are several goodies that they don't have. If they are more than a year old, they are practically antiques.

If you have one of these, you could put an ad in the paper and try to sell it, but you probably won't get much more than ten cents for each hard-earned dollar that you originally spent on it. You are much better off keeping it and upgrading it.

The automobile business brings out a new model every year. Computer technology evolves much quicker. There are new models and additions announced almost daily. If you want all the latest doodads and fancy fringes on your car, you only have to buy a new car once each year, but not so in the computer business. Every IBM personal computer that has been sold since early 1981 can be easily upgraded to perform as well as the newest one off the production line, and it can be done for much less than what a new computer would cost.

Original PC

IBM announced the original PC (for Personal Computer) an August 2, 1981. It was a historic moment. Whether you realize it or not, our way of life has been dramatically influenced and changed forever more because of this announcement and the computer that was introduced.

A lot of people criticize and take potshots at IBM, myself included. But you must give them credit for bringing some kind of standard out of the chaos that was reigning at the time. When IBM introduced the PC I, there must have been at least 100 different computer manufacturers. Each one of them had their own disk formats. Many of them had their own operating systems. Software had to be written to fit each format. But IBM, with its vast resources and reputation for quality, soon forced a de facto standard.

Since most of the computers being sold were IBM, most of the software was written for IBM. Soon several other computer manufacturers began making compatibles. This increased the base for software developers even more.

Third party manufacturers began making boards and other plug-ins and improvements for the IBM PC. It had an open architecture with five slots that allowed one to configure it in many different ways for specific applications.

Evolution of the PC, XT, and AT

The original PC I, introduced in August of 1981, came standard with 16K of RAM. It could be expanded up to 64K maximum. Its BIOS did not support the installation of a hard disk drive. It had five slots and a 62 watt power supply. It cost over $3000.

The PC-XT was introduced in March of 1983. The XT was for eX-tra Technology. It had eight slots and a hard disk drive. It came standard with 128K of RAM and could accept up to 256K on board. With 128K, one 360K floppy drive and a 10 MB hard disk drive, the cost was $4,995.

Soon after the introduction of the PC-XT, the PC II was announced. It was very similar to the PC I, except that it now came standard with 64K of RAM which was expandable up to 256K. It still had the five slots, but the BIOS now supported the installation of a hard disk. But it still had the 62 watt power supply, so the addition of a hard disk might have been more than the power supply could handle. The price started at about $3000. By the middle of 1984 the cost of the XT had dropped to about $4,300, and the PC II had dropped to $2,400.

The PC-AT was introduced in August of 1984. The AT is for Advanced Technology. It used the Intel 80286 Central Processing Unit (CPU) and was actually more powerful and more versatile than some minicomputers. With 512K of RAM, a 20 MB hard disk, a 1.2 MB floppy and a 360K floppy, the AT cost $5,795.

At the time of this writing, the PC II is down to about $2000. The XT is around $3000 and the AT has dropped to about $4900. The prices listed above do not include a monitor and driver card. An IBM monochrome monitor costs about $400 and the driver card, or Monochrome Graphics Adapter (MDA), about $185. The color monitor costs about $600 and the Color Graphics Adapter (CGA) costs about $160. The CGA can drive a monochrome or color monitor. IBM has also developed a high resolution monitor that costs $850, but in order to drive it, you have to buy an Enhanced Graphics Adapter (EGA) that costs about $1000.

Price Comparison

I am using an AT clone to write this. The enhanced IBM PC-AT comes with 512K of RAM. My clone has 1 MB. The IBM PC-AT has a 20 MB hard disk. My clone has a very fast 40 MB. The IBM PC-AT cost $4900, my clone cost me $1700. I added a NEC Multisync high resolution monitor and a compatible EGA for $800, for a total of $2500 for my AT clone. An equivalent AT configuration from IBM would have cost about $7000.

Upgrading Your IBM

If you happen to have one of the IBM PCs, you can easily and inexpensively upgrade it. The clone hardware is designed from the de facto IBM standard. Almost everything that works in the clone will work in the IBM and vice versa. IBM is very large and it often takes them quite a while to institute changes. The clones have taken advantage of this and they come out with new and improved designs almost daily.

Power Supply

If you have the PC I or PC II, you probably should

SUPER COMDEX SPECIAL

COMPUTERS

Victor VPC II 2-floppy mono system ..... $ 995.
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Victor VPC II 30-megabyte mono system ..... 1,345.
Victor VPC II 360K/720K/20MB mono system ... 1,495.
Powerhouse V286 30MB (39ms) 512K mono system ..... 2,425.
Powerhouse V286 40MB (39ms) 512K mono system ..... 2,485.
AT&T 6300 360K/20MB monochrome system ... 1,595.
Compaq portable W/640K, 1 floppy, 20-megabyte 1,995.
Compaq portable II Model 2 w/2 floppy drives ... 2,245.
Compaq portable II Model 4 W/1.2 & 20MB (Original) ..... 3,345.
Compaq Deskpro 12MHz 286 base system ..... 1,945.
Compaq Deskpro 12MHz 286 40-megabyte mono system ..... 3,195.
IBM AT Model 339 30-megabyte mono system .. 4,195.
IBM Personal System 2 Model 30 w/2 floppy drives ..... 1,395.
IBM Personal System 2 Model 30 w/20-megabyte 1,895.
IBM Personal System 2 Model 50 ..... 2,895.
Predator Baby AT 40-megabyte mono system (10MHz) ..... 1,895.
Toshiba T1100 Plus 640K/T3100 10MB Laptop ..... 1,545./2945.
NEC Multispeed Laptop ..... 1,445.
Macintosh Plus w/monitor & mouse ..... 1,595.
Macintosh SE Model 1 w/keyboard ..... 2,295.

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Epson FX-286e ..... 549.
Epson FX-86E ..... 359.
Apple Laserwriter ..... 3,995.
Toshiba P321SL/P341/P351 Model 2 ... 549./639./875.
NEC P6 Parallel ..... 439.
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Anchor Volksmodem 1200-Baud external ..... 169.
Signalman Lightning 2400-baud external/internal .. 309.
Hayes 1200B internal/1200 external ..... 329./379.
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8087-2/8087-3 ..... 155./129.
80287-6/80287-8 ..... 179./245.
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Paradise EGA board ..... 189.
STB Chauffeur HT ..... 229.
Generic color graphics/printer adapter ..... 69.

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Seagate 20MB kit/30MB kit (w/controller) . $295./$359.
Seagate ST4038/ST4051/ST251 (all for AT) ..... 539./599./499.
Miniscribe 3650 40MB half-height for PC/XT ..... 489.
Western Digital 20 megabyte filecard ..... 469.
Fuji 20-megabyte/30-megabyte hardcard .... 409./499.
National 10 megabyte external ..... 399.
Okidata 1/3 height 360K floppy ..... 59.
Compaq half-height 360K floppy (original) ..... 69.
Toshiba 3½" 720K internal floppy kit ..... 135.
5¼" 360K external drive for Toshiba laptops ..... 265.
3½" 720K external floppy drive ..... 295.
Toshiba half-height 360K floppy for PC/XT/AT ..... 89.
Toshiba 1.2MB floppy for AT or compatibles ..... 109.

MONITORS

Casper CGA monitor/EGA monitor ..... $295./$385.
Casper TTL amber monochrome w/tilt & swivel .... 89.
Samsung EGA monitor ..... 389.
Samsung TTL amber monochrome ..... 79.
Samsung TTL amber monochrome w/tilt & swivel ... 89.
Amdek 410A TTL monochrome ..... 169.
NEC JC1401 multisync ..... 549.

SOFTWARE

ALS Cloneware 18C Financial Consultant ..... $ 69.
CPYAT2PC (copies 1.2MB files in 360K format) .... 69.
Q&A (Symantec) ..... 239.
Lotus 1-2-3 (latest version) ..... 309.
dBASE III Plus (latest version) ..... 389.
Computer Associates (IUS) Accounting Software .. 395.
Borland software ..... Very Low
GEM collection/GEM graph ..... 109./129.
Disk Optimizer (new version) ..... 29.
Microsoft Windows Version 1.03 ..... 69.
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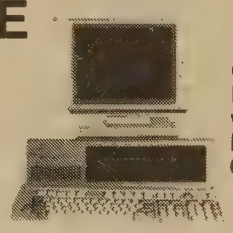

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Disk I/O w/game & clock	$70
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Ser, Par with clock (XT); Ser with par port (AT) by Everex	70/70
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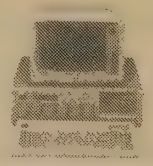

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Seagate ST238, 30 meg w/RRL type controller w/cables	379
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Full height hard disk by Seagate ST4038 (40 MB)	529
Full height hard drive by Seagate ST4051 (50 MB)	600/490
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Taxan 770 multi-scan	565

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take out your power supply and buy a 130 watt clone power supply. Some vendors are selling them for as little as $60 now.

RAM Memory

Most of the clones made today have motherboards that will accept 640K of RAM. Unless you have a very late IBM, your motherboard will accept a maximum of 256K. If you have a PC I, it will accept only 64K. You can add a multifunction card with 384K of memory, a clock/calendar, a serial and parallel port, a RAM disk, and spooler for about $100.

Disk Drives

You can take out the full height floppy disk and replace it with two half heights, or a half height floppy and a half height 20 MB hard disk. The half height floppy will cost less than $100. The 20 MB hard disk will cost less than $400.

Monitors

You can buy a high resolution monitor for less than $500 and an EGA card to drive it for less than $300.

Keyboards

Your IBM keyboard is solidly built and has an excellent tactile feel to the keys, but the **Return** key is small, the same size of the other keys. The **Caps Lock** and the **Num Lock** keys do not indicate whether they are on or off. A new and improved keyboard, with LEDs for the **Caps Lock** and **Num Lock** keys, can replace the old keyboard for about $60. If you do a lot of typing, it will be well worth it.

Accelerator Boards

The IBM PC and XT operate at 4.77 MHz. The AT operates at 6 MHz. The clone XTs and ATs can operate up to 8 MHz. Some clone ATs are operating a 12 MHz. There are several boards and other hardware available that can make your IBM operate at a much faster speed. It is even possible to plug an accelerator board with an 80286 CPU into a PC or XT. You would then have almost all of the capability and speed of the best AT. It can cost from $200 up to $1000 to speed up your PC or XT. Even at $1000, it is a lot less than what an IBM PC-AT would cost.

Turbo Mother Boards

You can buy a clone turbo motherboard that is switchable from 4.77 MHz to 8 MHz. Take out your IBM motherboard and install the clone board. You could take the IBM BIOS and ROM from your IBM motherboard and install them in the clone. You would then be assured of 100% compatibility. You could also use the RAM from your IBM motherboard. You can buy a clone turbo motherboard for about $100.

Be very careful when removing and installing chips. They are fragile, and one broken pin ruins the whole chip. Use a chip extractor/inserter. Also, be sure to ground your extractor, because even a little static can ruin your irreplaceable chips. It might also be wise to check whether there are any laws that make this switch illegal. Finally, upgrading your IBM this way will void the warranty, if it is still in effect, so you may want to check on this before you start.

Summary

If you have an older IBM PC or PC-XT, don't give it away or throw it away. You can easily upgrade it to be as good as the very latest clone very inexpensively. If you don't tell anyone, no one will ever know that your system is not 100% IBM. □

If you have an older IBM PC or PC-XT, don't give it away or throw it away. You can easily upgrade it to be as good as the very latest clone very inexpensively. If you don't tell anyone, no one will ever know that your system is not 100% IBM.

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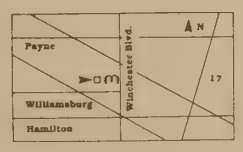

PC-WRITE

Powerful Word Processing At Shareware Prices

By Lenny Bailes

So you'd like to buy a power-user's word processor, but don't want to spend hundreds of dollars. You've seen the publicity on the new release of *WordStar,* and seen the 125 new things it will let you do, but you still can't open a window with it and edit two documents at the same time.

You've looked at *WordPerfect* and made note of its ability to control printers, but you would like to generate ASCII documents which don't contain hidden format codes. And besides, you kind of like to use the mouse once in a while when doing document revisions.

You've read about *XYWRITE III's* flexibility in generating macros and redefining the keyboard, but are a little in awe of its 300+ formatting commands.

You want something that can easily search & replace, merge documents, and give you internal formatting flexibility with a minimum of head scratching and manual thumbing. But two or three hundred dollars is a big investment, especially when you're not even sure you'll like the package or even be able to use it.

Well, there is a word processing program which has all the capabilities mentioned in the last paragraphs, *and* you can try it out for a little over the cost of two floppy disks! And if you decide you like it, you can buy it for less than $100, *plus* get a $25 rebate *on top of* that from the company if you can sell a friend on purchasing it.

FEATURES

PC-Write is a menu-driven word processor which maintains compatibility with *WordStar's* control-key operations, but also uses a function-key system which is similar to *WordPerfect's.*

Unlike *WordPerfect,* however, the command options will walk you through formatting, search and replace, or file operations. The one-line Status Report flashes menu options on the screen whenever you hit the function keys. The menu disappears again when your command is executed. You seldom have to access the help screens. If you do, all of the features are listed on the first screen and can be quickly referenced for details with the cursor keys.

PC-Write is streamlined. The main program is only about 100K, and requires only 128K of RAM (256K if you want to edit a 60K document, and 320K if you want to use the spelling checker). It loads quickly and remains memory-resident. You have a choice about allocating 50K for complete on-line help. If you're short on memory, you can access an abbreviated 12K help screen.

What is it like to use *PC-Write*? The newest version out from Quicksoft is 2.71, a maintenance update of 2.7. There are no real changes in 2.71, only some improvements in a few minor 2.7 services. The screen-capture utility now lets you grab the first line of the screen instead of starting at line 2, the macro-playback will cancel if the search function finds no text, soft spaces can be searched and replaced, and the spelling checker has been improved in its "guess correction" function.

The real changes in *PC-Write* occurred between versions 2.6 and 2.7. The automatic paragraph indent feature which many users disliked in 2.6 is gone, and 2.7 now makes a distinction between wordwrap and automatic reformatting. This means you can have the line wrap feature on, but still go back and make already typed lines shorter or longer. This will not automatically change the rest of the paragraph. Or, you can turn auto-reformatting on to have the entire text readjust itself. You can also turn wordwrap off entirely.

One of the interesting things about *PC-Write* is that it has a free-floating rather than a rigid cursor. You can move the cursor beyond the already-typed text and type some more. You can have the mouse move the cursor half a page down and continue typing. All the necessary carriage return/linefeed codes are automatically taken care of. Version 2.7 has added printer support for the HP-LASERjet+ and Adobe PostScript, as well as the Ricoh engine. While *PC-Write* has no downloadable fonts, as with *WordPerfect,* you can use whatever hard or soft fonts your printer has to best advantage.

The printer is controlled by a series of dot code format commands inserted into your document. It's similar to *WordStar,* but in addition to line spacing, headers & footers and margin/paragraph specifications, you can also prompt the printer to accept input from the keyboard, insert a graphics file into the text, reserve space for an illustration or change fonts.

Provision is also made for for table of contents and index generation. The dot codes can be left visible in the text, or suppressed from the screen while you do your final review. Like *WordStar,* most formatting codes don't take effect until you print, but one thing you can do is get on-screen line justification (which *WordPerfect* didn't include until version 4.2, and *XYWRITE III* still can't do). *PC-Write's* printer program is actually a separate .EXE file which can be executed from within the editor, or independently at the DOS command line.

Also new to *PC-Write* 2.7 are the spelling checker and the screen-clip feature. The screen-clip accomplishes what you can do with *Sidekick's* notepad. Exit to a DOS Shell, load any program and the resident capture key lets you mark all or part of a screen in text mode, return to *PC-Write* and paste it into your document (a macro can easily be run to save the screen as a separate disk file). The spelling checker has an optional on-line beeper which will scold you whenever you exceed the bounds of the dictionary—or you can do a conventional word by word check.

Other desirable things 2.7 can do include leaving bookmarks in the text for the cursor to return to, replacing tab codes with spaces for *WordStar,* marking pairs of symbols or non-ASCII characters for search and replace, search and replace all non-ASCII character codes, swapping "find" and "replace" in the search function, stripping high-bit characters, and transposing character pairs or capital-small inversion.

I particularly like *PC-Write's* ability to leave an open right margin until you enter a carriage return, turning each paragraph into a pure one-line ASCII string. This is useful if you want to read a text file into a desktop graphics program with its own wordwrap and formatting expectations. There is no 255 character

Figure 1. PCWrite opening information screen:

```
File to load or create (Esc: cancel  F8: dir): "work.doc"

    PC-Write (R). Version 2.71. Released on 24-Dec-86. Registration #00632
    (C) Copyright 1983-1986 by Bob Wallace, Quicksoft. All Rights Reserved.
    Shareware: Please help distribute PC-Write by sharing unmodified copies
    of the diskettes in the U.S. and Canada. Please don't copy the manual.
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    Quicksoft, Inc. 206/282-0452.  219 First North #224, Seattle, WA 98109.
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If no file is opened at the command line, PC-Write displays this opening screen.

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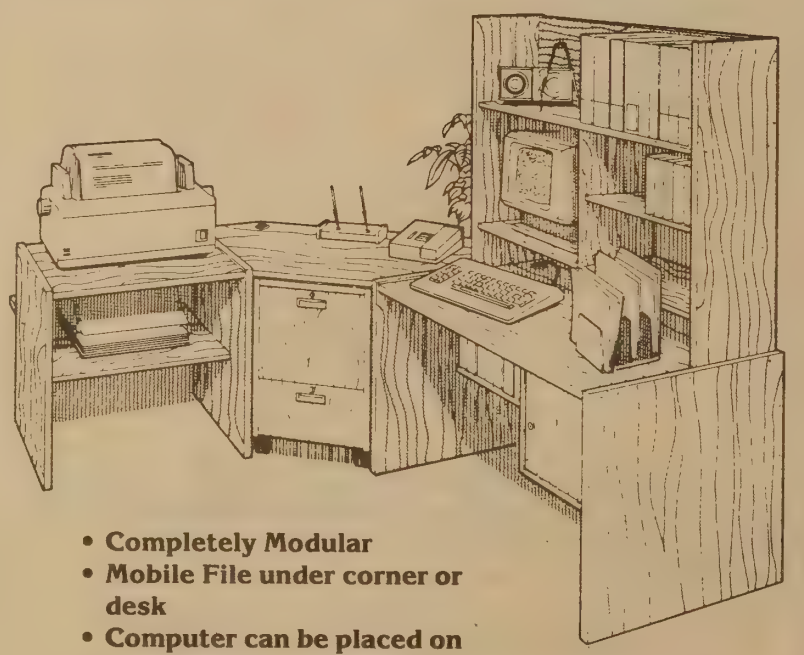

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Figure 2. Help Screen

Esc: Help off, Cancel. F1: Help off, continue. Arrows: Select a Help topic:

Basics	Dot lines I	Guide lines	Merge Temp. I	Ruler spacing
Auto-numbering	Dot lines II	Headers/footers	Merge Temp. II	Screen clip
Auto-reformat	Dot lines III	Locate cursor	Misc. stuff	Scroll/jump
Char: boxes	Enhance text	Manual reformat	Page breaks	Spaces/hyphens
Char: foreign	Enter text	Margins/tabs	Page layout	Spell checker
Char: math	File conversion	Mark text	Printing	System/file
Copy/move text	File management	Measuring space	Record keys	Windows
Cursor moves	Find/replace	Merge steps	References	Shareware
Delete text	Footnotes	Merge input	Ruler lines	Support service

B A S I C S Loading a File and Exiting

FILE OPERATIONS

1. Create or load a file	A>ED filename
2. Enter text	from keyboard
3. Save the text to disk	Press F1 F3
4. Edit the text	Bksp, Del, Ins
5. Print the file	Press F1 F7
6. Close the file	Press F1 F2

SEE ALSO:
CURSOR MOVES: Arrow keys
RULER LINES: format (margins)
DOT LINES: format (printing)
ENTERING TEXT: editing
MARKING: move, copy, delete
FIND/REPLACE: text or chars

The cursor keys may be used to highlight any of the 50 help topics, and information is displayed below, as with "BASICS."

Figure 3. Sample editing screens

Esc: cancel. F1-F1: help. Alt/Shf/Ctl/Arrow: select. Fn-key/Letter/Enter: action.
sF1. Fn-keys+ sF7. Reform+ sF9. Location
sF2: Merging sF4: Shareware sF8. Center
Turn function key reminder on+ or off–

This is a sample PCWrite screen. The four-line menu at the top appears when a command is selected and disappears when through executing.

limitation; you can do a 40,000 word one-liner, if you like.

LIMITATIONS AND CONCLUSIONS

When you look at all the strengths which Bob Wallace (*PC-Write*'s author) has incorporated into a program which is distributed as shareware, it makes a very formidable package. It should be duly noted, however that *PC-Write* has some limitations.

There is an upper limit of 60K on the size of the text file you can edit. If your file exceeds 60K you have to break it up into smaller ones. If your initial file is larger than 60K, you can only load part of it in the editor (there are functions in the program to assist you in dividing your files). It is rumored that the next version of *PC-Write* is going to obviate this limitation.

PC-Write does not offer automatic hyphenation help. It does distinguish between soft and hard hyphens in text and lets you make manual hyphenation decisions.

PC-Write does not have an automatic multi-column feature. Text can be placed in a long justified single column, and macros can be built to cut and paste alternate pages into each other, but you can't easily edit "snaking" newspaper style columns.

PC-Write does not automatically print in the background. I have found several public domain print spoolers, however, which work fine with the program, and let you print and edit at the same time.

PC-Write does permit editing of multiple documents via a horizontal split-screen window. Its printer control allows for multiple copies of individual pages, and repeated page prints. It has PostScript support. The editing functions are supported by pull-down menus which walk you through function key combinations as you select them, or you may use embedded *WordStar* keyboard command sequences which are equivalent. *PC-Write* has visible on-screen line justification and undo. It has file management features which allow directory editing, exit to DOS, and easy switching of documents in the editor. The on-line help screen is easily accessible and convenient. There is mouse support for Microsoft and Mouse Systems mice.

PC-Write is distributed by QuickSoft, 219 First Street, N., Seattle, WA 98109 (Telephone 206-282-0452). There is telephone support for registered users. If you can't find the program on a public bulletin board system or get it from a local shareware sales distributor, you may obtain a trial copy by sending $16 to QuickSoft. The disks come with a written tutorial and condensed (15% reduced) manual which may be printed out. $45 gets you a handsome hardbound manual from Quicksoft, or $89 gets you the manual and registers your copy. Registration entitles you to program updates, bulletins, and a $25 commission whenever someone registers a copy with your number on it.

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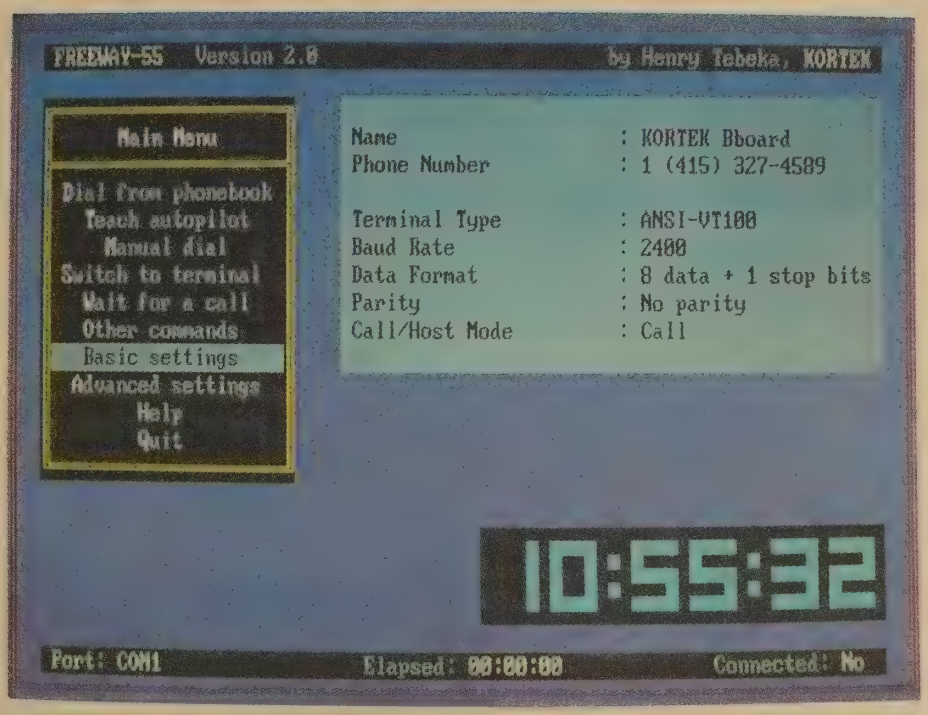

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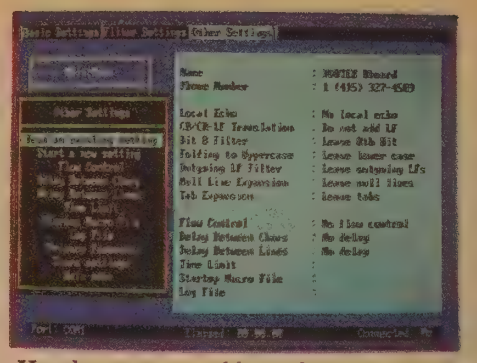

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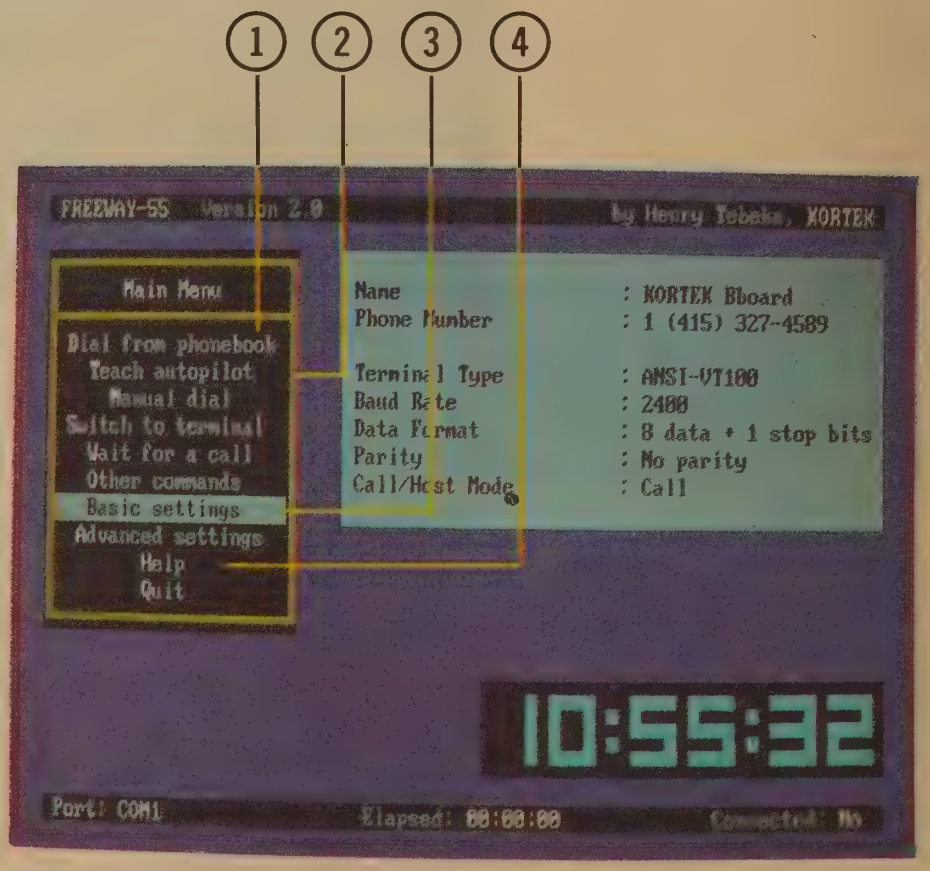
② **Autopilot:** Computer communication is more than just placing a call. You have to log on to the other computer, and often type introductory commands. Freeway provides an "autopilot" to relieve you of this chore. You simply go through these preliminaries once, with the autopilot noting your every move. Then, when you next call, the autopilot will do the work for you.

③ **Setting Up:** Setting up Freeway is a piece of cake! The parameters you need — baud rate, parity, and even the number to call — are gathered in simple menus. To set them, you just zip through with arrows and Enter, and then save them in the Phonebook. Later, changing one or all of them is just as easy!



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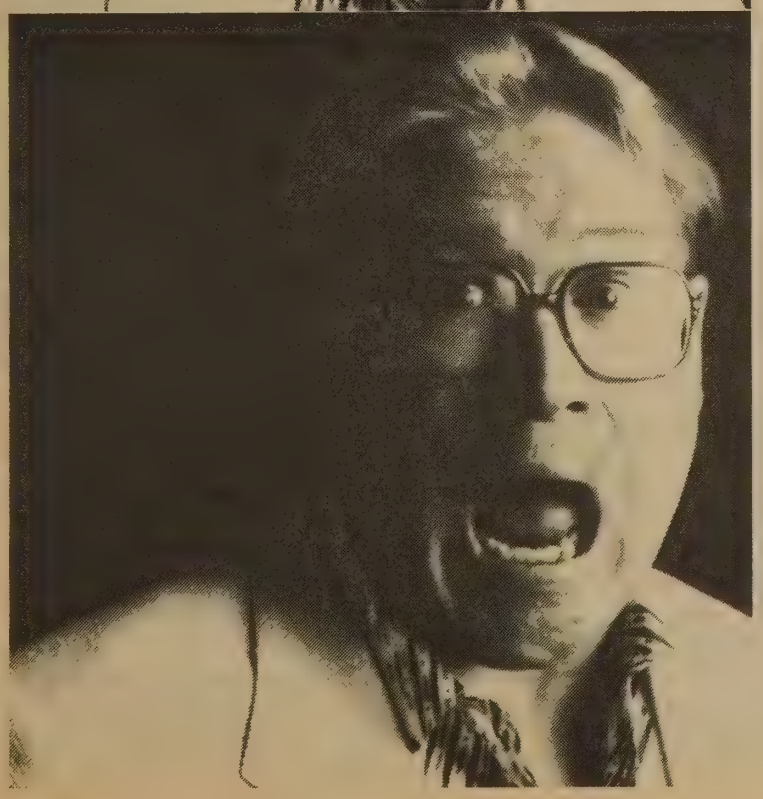


The Industry *(And The Press)* According To DVORAK

By Mary Eisenhart

Informative, irreverent and irrepressible, John Dvorak comes perilously close to being a household word, at least in computer-owning households. His columns—all different—run in computer-oriented (e.g. *PC Magazine, MacUser, DEC Professional*) and other publications (for instance, he writes separate computer and general-interest columns for the San Francisco *Examiner*). Each features a melange of news, product reviews, gossip, and unique analysis that ranges from insightful to flip.

"I'm kind of a populist," he says. "My responsibility is to my readers." Woe betide the purveyor of a deficient product that falls into Dvorak's hands and becomes the target of scathing rebuke—though Dvorak himself says he's likely to reserve the heavy artillery for the products of large companies, on the grounds that a bad product put out by an obscure start-up is likely to fade away without any help from him, whereas a heavily-promoted turkey is likely to sell thousands of copies to hapless users before the word gets out. "People deserve to be protected from that," says he. On the other hand, he delights in informing his readers about unknown but excellent products.

Dvorak's involvement with computers dates from around 1975. He was working for the Air Pollution Control District when his department acquired an HP 3000 minicomputer. "My department wasn't using it for anything, as far as I could tell," he recalls, and nature abhors a vacuum, so he went back to the University of California to take programming courses (although he'd taken some computer classes during his college days in the '60s, he'd graduated with a degree in history and enough background in chemical engineering to keep him working chiefly as a chemist).

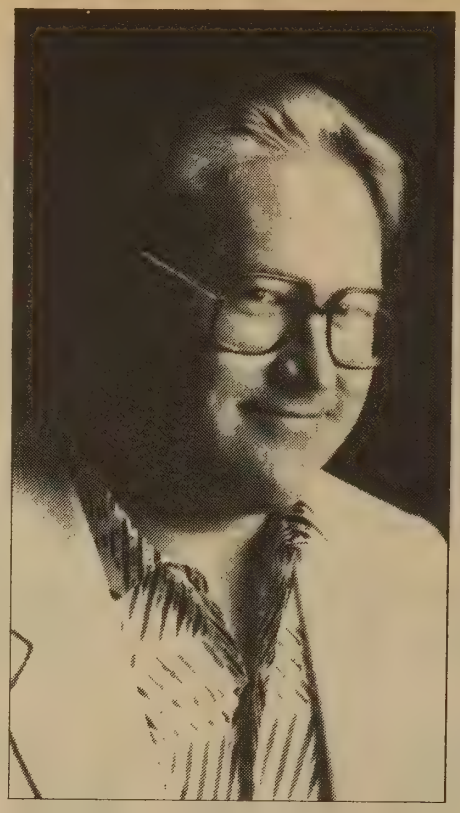
When the first personal computers became available around 1976, an intrigued Dvorak bought a Sol computer with a Northstar disk. One thing having led to another, he was soon publishing a newsletter called *Software Review*, which, he says, "was one of the first in the country that was trying to market public domain software to the Northstar audience."

After a few years in which both newsletter and software business prospered, Dvorak was offered the editor's job at *Infoworld*. During his year and a half at the helm, he says, the magazine's circulation grew from about 20,000 to about 85,000. "I developed a front page formula that was rather successful," he recalls. "We had a real talented staff, and I let them do their own thing. I also brought in as many columnists as I could get—in fact we had just about every columnist that *was* a columnist, with the exception of Jerry Pournelle. We had a lot of news, and we had an excellent review system. It was pretty good."

Through the ensuing years, through unrest, coups and shifts of editorial policy, Dvorak's Inside Track column continued to run in *Infoworld* until mid-1986. "I don't change without some impetus," he says. "I kind of hung on for awhile until *Infoworld*'s direction changed radically and they

weren't interested in the column, despite what their readers wanted."

These days he's writing for *PC Magazine*, published by Ziff-Davis. 'The crew at *PC Magazine*, and the magazine itself, is probably the best thing in the country," maintains Dvorak. "Everybody on the staff is a computer enthusiast, and the executive editors and the editor-in-chief are very knowledgeable. It's a situation where if you write something and you're pushing your luck on your facts, they'll cover for you so you don't go out there and say something stupid. Considering the size of that magazine, it's amazing how few technical errors are in there. If they say something is black and green, it's black and green. You can count on it, and it's very comforting. Because sometimes you're working with rumors or gossip about something, or you've got your chip number wrong or who knows what, and they'll catch it all the time. It's rare. It's just unbelievable. And it's one of the most fun groups I've ever been with."



If you want to get in this scene inexpensively, your clone is your only alternative. Right now the real hot market is these Taiwanese and even American-made cheap clones, because it's an entry-level point. An XT clone's a heck of a deal. Especially with the turbo boost where you get a faster processor.

What were your ideological differences with Infoworld? There seem to be a lot of complaints from readers that they've gone totally corporate.
They had a theory that sounded good at the time. I think *Infoworld* didn't have to go 100% corporate, because they were doing fine. The corporate people were reading it, and all they managed to do was lose the part of the audience that was more interested in *Infoworld*'s old reputation, which was hard-hitting and kind of zany. There's really nothing remotely zany in *Infoworld* now, except they tried to make [gossip columnist] Cringeley artificially kind of like [**PC Week**'s] Spencer Katt.

Which was kind of me-tooish at that point.
Yeah, it was me-tooish, and it wasn't that zany. So it became kind of—I don't know what the good word is . . .

Stuffy?
Stuffy. It became stuffy, and these things are always a reflection of the editor. It's a stuffy publication. It seems to still have a fairly good corporate following.

The idea initially—which I now think was a mistake, looking back on it, because it assumed too much—was that there are micros going into businesses, and the MIS people need some help in integrating them into their business, and they really don't know what they're doing. So let's talk to them because it's a huge group.

This ignored the fact that MIS people really don't have that much to do, and what they end up doing is, when a trend like this occurs, they go to seminars like there's no tomorrow.

That's what keeps the Seybold [seminar] people rich.
It keeps the Seybold people rich, it keeps a million guys rich—and MIS people get up to speed on this faster than anything. They become kind of microcomputer hackers and nuts and enthusiasts. They know a lot, and you can't make money by talking down to them, which is essentially what this theory dictates.

That's why, if you want to see a magazine that's flying, look at *PC Magazine*, which during the same period has grown from 300,000—it's at 450,000 now and should be at 500,000 by the end of next year. It's grown more then the entire circulation of *Infoworld*. And it's grown like that without any subscription solicitation. It's just people volunteering—and that's because what we try to do is appeal to hackers of all sorts, and it's mostly the businessman, or the MIS guy, or whoever it is that's in the company that likes microcomputers.

We just load them down with hard facts, information, and analysis. We don't try to explain to him how the microcomputer fits into his environment—he already knows that. You don't need to keep beating a dead horse about how to talk your boss into buying a micro and all that kind of stuff. You just tell them—here's the new EGA card that came out. Here's 500 of them—here's the one that's good.

It's a pretty interesting magazine. It's a phenomenon, which is one of the other reasons I kind of like being there, because it's a phenomenon that I don't think will be repeated in publishing history too often.

What kind of audience do you personally address in your columns?
I try to talk to the guy who wants just one little extra edge over what the rest of the magazine can provide, and that edge is the ability to see through fads or the ability to find some obscure product so he can show off. My column basically consists of some gossip that you can't get anyplace else, some analysis that's a little different from what everybody else is saying, so if you want to get into an argument you can use my ideas, and also some information about products that are obscure but good. So you can say, look what I've got, and everyone thinks you're wonderful.

It provides people with just a little edge, and it also has entertainment value. Most of my stuff in *MacUser*, for example, is purely entertainment.

I try to be entertaining as much as possible, because I feel that if you have any points to make they're more easily made if they're couched within an entertainment formula, because people can read it easier.

One of the complaints I would get occasionally, depending on what editor would come through *Infoworld* during the time where there was a lot of transition—they'd question why this Inside Track column was in *Infoworld*, because we're not appealing to "industry types," and my column tended to sound like it was for "industry types."

We're talking to the business user, or the end user, they would say, and I'd have to always give them the counterargument and say, look, you're missing the point. If you look in the back of *TV Guide*, there's always this thing that looks like a bulletin, it's written on yellow paper and it looks like it's written by a typewriter, and it's about who's going to be in what movie, how much a movie's going to cost, what we can expect to see next season, and all this stuff which appears to be industry news.

Why are they putting this in *TV Guide*? *TV Guide* is not an industry newspaper. Well, the reason that people do that, and they do it in all fields, is because the readers like to feel that they're part of something that's bigger than they are, and so you give them this kind of industry-like thing just for their benefit. Readers eat it up.

Other things that readers like, and *Infoworld* took them out—we always used to have the best selection of cartoons, and now, except for *Dr. Dobb's Journal*, which runs maybe one or two cartoons, there's not one magazine out there that runs cartoons, except maybe *Ahoy!* or one of the other machine-specific things for home audiences. People *like* cartoons—it's for the reader's benefit that you do some of these things.

One of the problems with all the computer magazines is that they get a little uptight about what they can offer the reader. They don't think like mass-market magazine people think, which is that readers like variety, and cartoons, and kind of insider-type columns, gossip column kind of things. There's no question about it.

Today's gossip is tomorrow's product, too.
Yeah, to some extent, but I would say that a lot of stuff that is being worked on and illegitimately being worked on never sees the light of day, it's just kind of interesting to know that somebody's working on it.

What kind of feedback do you get from your readers?
I get pretty good feedback. I get different feedback from different magazines, and most of the people don't know I write for other magazines. There's not too much cross-fertilization, which I think is kind of interesting. *MacUser* readers don't even know I write for *PC Magazine*, and *PC Magazine* readers are always surprised when they find out I write for *MacUser*. That's always kind of shocking, but that way when the

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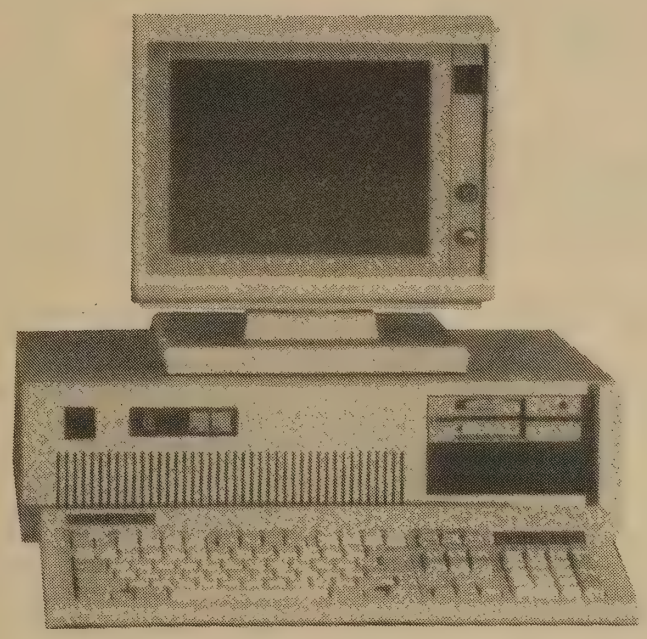

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The Macintosh people are the most interesting, to be honest about it. The mail always is fancy. It's either on a LaserWriter or on a printer using different fonts, or the guy's made a very elaborate letterhead—it's unbelievable compared to the letters I get from IBM people, which is usually just a daisywheel output, stock letterhead—very old-fashioned compared to the stuff you get from Macintosh users. Mac users are either diehards or very cynical in a funny kind of way that's indescribable. The personality of a Macintosh user is not the same as the personality of a PC user.

In what way?
I think they're kind of iconoclastic. They like to be different—they're not quite as bad as someone who builds a kit car, but it's definitely along the lines of the convertible owner or somebody who doesn't like being in the crowd. It's just like those [Apple] ads of those people walking off the cliff—it's pretty accurate.

PC users are more pragmatic, there's no question about it. They are practical, no-nonsense types, and they prefer a little harder, news-factual edge on the material they read. I don't think they'd put up with the column I write in *MacUser*—which is probably the best column, generally speaking, insofar as experimentation is concerned, in any of the magazines. Because it's acceptable in that area. It's a little too wacky, I think, for the PC people.

Do you think Apple is going to be successful at getting the Macintosh entrenched in the Fortune 500?
I think they're going to get an entrenchment, but not on every desktop like they'd wish for. I've been pushing it from day one—it's a wonderful executive's tool, an executive secretary should have it to do correspondence with a LaserWriter—you can produce fabulous memos and incredible-looking personal correspondence with it. It's very expensive, but for the executive, you can really look like the top guy.

Also any graphics applications—IBM has really not been able to come up with anything close—I don't care how much they try, even with the new cards Apple's just got such a lead on them. Producing fancy output on an Apple is just easier. And also the mouse theory and the way the mouse works on the Macintosh is so much easier, just more comfortable. The IBM mouse drivers—I've yet to run into one that's worthwhile.

There's an accelerator algorithm in the Macintosh mouse, and the way you can understand this is—go to a store and find a Mac mouse and an IBM mouse that are working, and put them on a piece of paper. Take a pencil and push the arrow to the top of the screen, mark on the paper where the top of the mouse is, and then move ever so slowly down to the bottom of the screen, and then mark the position of the mouse. Now go back up, put the mouse on that upper mark and get the arrow back where it belongs, and then jerk the mouse down as fast as you can. The arrow will get to the bottom of the screen in about half the distance. If you move it real slow, the resolution increases so you can really pinpoint where that mouse has to go. If you want to just move the mouse across the screen, you can move it real fast.

With the IBM mouse you'll find that no matter what speed you move across the sheet, it'll be the same top and the same bottom. So you're always in high gear, and it's not the way it should be done. It's very uncomfortable and very hard to use, and all IBM applications use the mouse that way. It's just annoying.

I don't understand it. Everybody talks about it—when Apple first developed their mouse interface, they talked about this simple trick—and *still* it doesn't come over to the other side because these two groups don't communicate. I don't know what the problem is.

Do you think the new IBM Personal System/2 computers are going to make a serious dent in the prospective Macintosh-buyer market?
No.

Who's going to buy them?
I think just an upgrade—corporate guys are just going to move to them. The big buyers, the Army kind of people. I don't see that they have much appeal to a guy who's trying to get a cheap system up and running. He can do just as well with a clone—especially when they come out with an EGA card, which has already been announced by two or three manufacturers—the graphics can be the same, you can get 3 1/2″ disk drives and you'll be in business. You'd just have a different bus, but I don't think that's going to be a problem for at least two or three years. By then the bus'll be cloned, if we're going to move to that bus. We've got plenty of time to do it.

Meanwhile, clones are now $500 and ordinary folks are buying them because it's their most reasonable option. Is that going to change what's being written for those machines?
I don't see it. The other operating system's not out, so that part of it's academic.

The fact of the matter is if you want to get in this scene inexpensively, your clone is your only alternative. The Apple II is, I think, a dying machine—Apple should bring out some kind of a low-end Macintosh and maybe a super-cheap $250 Apple II clone, and they would get some of this business. But right now—and I don't know why Apple has ignored this market, because they can compete in it as well as anybody—right now the real hot market is these Taiwanese and even American-made cheap clones, because it's an entry-level point, like Radio Shack use to do it, and you can upgrade, and you've got a big bus there. Radio Shack isn't really doing it right, because their upgrade path really isn't as much of an upgrade path as you get when you buy an XT clone.

An XT clone's a heck of a deal. Especially with the turbo boost where you get a faster processor. They outperform a lot of stuff that's out there.

I think that it's getting a little old that we can't come up with anything that's radically new, such as the spreadsheet, which has revolutionized sales. I wish that something would happen pretty soon, because I don't want to see this scene degenerate into spreadsheets/word processing.

All of a sudden a lot more games are being written for IBM.
That's because the home market has discovered that they can buy an IBM computer, more or less, although it doesn't have an IBM logo, for far less than $1000, and these people want to play games too. All the game manufacturers are just shocked by this—it started about two Christmases ago. I went to Whole Earth and talked to them about their sales of games and they told me that IBM had tied Apple. And now it's maybe even more.

The irony, of course, is that unless you have an EGA card, which is about $200 added onto your clone, the games that are running under CGA are the original old graphics, just terrible compared to an Apple. IBM games are very ugly.

Do you think it was smart for Atari to suddenly bring out a clone line?
I think that's a red herring. They just wanted to show off and scare the pants off of Commodore, is my theory. We'll see. Commodore's clone is a disaster. It's the most overpriced thing on the market, considering—you might as well buy an IBM.

Commodore, I don't know. I guess they've been around long enough, got enough people out there using those machines that they'll stick around for awhile.

Atari—the STs are quite nice and probably offer the most computing value right now.

If you were an entry-level person, what would you buy?
If I was an entry-level person, I'd see what my friends had, and what I could afford, and if I had a buddy with an ST I'd probably get an ST.

If I was in college—when you're in college you can get a Macintosh so cheap, at something like half price, which is why you see so many college kids with Macintoshes—I'd probably get a Macintosh. If I didn't have this opportunity, or I just wanted some cheap computing power, or learn to program a 68000—there's the ST; you can also buy a cartridge that fits into the Atari and turns it into kind of a Macintosh.

Anything else you'd like to say to the folks?
Hi mom!

Yeah, here's one. I think that it's getting a little old that we can't come up with anything that's radically new, such as the spreadsheet, which has revolutionized sales. Ever since the invention of *VisiCalc* there hasn't been anything shockingly new—with the possible exception of maybe desktop publishing, which I don't think has the impact of the spreadsheet. And I wish that something would happen pretty soon, because I don't want to see this scene degenerate into spreadsheets/word processing, which it seems to be doing.

Also, on the game side, we haven't seen any breakthrough games almost since *Pong*. I complain about this all the time. There's only been the maze games, *Pac-Man* type, the move-and-shoot game, *Galaxian*, and adventure games, where you roam around, and simulations like chess and things like that. Since the maze game, *Pac-Man*, there hasn't been a new game invented that's something compelling. I wish there would be, because that's getting old too.

Any theories where these breakthroughs might come from?
If I did, I wouldn't be writing about them. I'd be in business, and Dvorak's Software would be rolling along here. □

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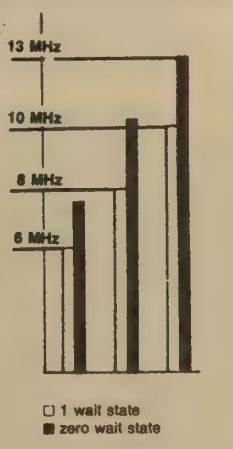

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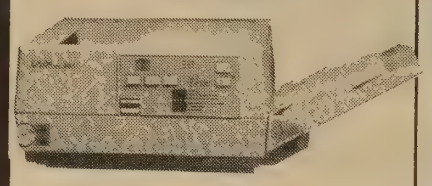

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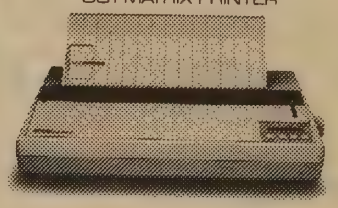

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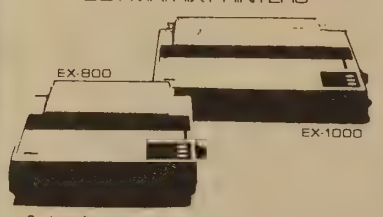

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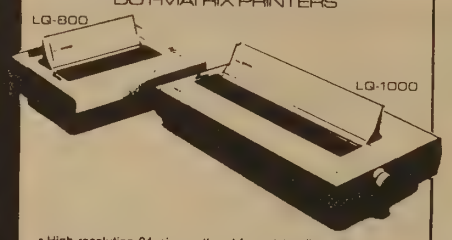

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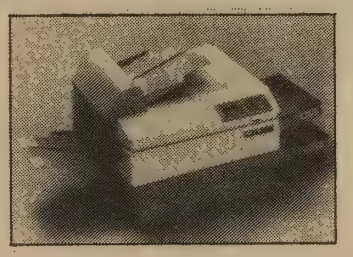

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VP-PLANNER

More Than A 1-2-3 Clone

By Woody Liswood

Considering the mud-slinging and fast-gun lawsuits over look-and-feel issues in the spreadsheet arena, commenting about the similarities and differences between *Lotus 1-2-3* and *VP-Planner* might be as dangerous as taking sides between the Hatfields and the McCoys. On the other hand, for over a year now I have recommended *VP-Planner* to my clients, because for $110 you get an unprotected spreadsheet which does everything that *Lotus* does.

VP-Planner advertises itself as a clone of *Lotus 1-2-3* that does more than the original product. Lotus says that *VP-Planner* is a direct rip-off and is suing Paperback Software. Software Garden says that *1-2-3* is a direct rip-off of *VisiCalc* and is suing Lotus.

No one argues about *SuperCalc* and *Multiplan*, but they both look like spreadsheets to me. *SuperCalc 4* will even read *1-2-3* files. *Silk*, brand new in the market, reads and writes *1-2-3* files but describes itself as the next generation. *Twin*, which was also sued by Lotus, just says that it has a *Lotus* clone.

Then there is *20/20* which runs on PCs, minis and mainframes, but no one pays much attention to it. Now, isn't that clear?

SPREADSHEETS— 1-2-3 VS. VP-PLANNER

So what about *VP-Planner*, the subject of this article? It reads and writes *Lotus 1-2-3* files and can use Lotus macros. Therefore, one might say, at this level *VP-Planner* and *Lotus* are identical, whence comes the term clone. *VP-Planner*, however, also has what it calls a multidimensional data base (more about this later on), which makes it significantly different from *Lotus*.

The spreadsheet portion of *VP-Planner* does not look quite like *Lotus*. The menus are displayed and invoked at the bottom of the screen rather than the top. Does that make a difference? Not in my experience. The menu items, although identical to *Lotus 1-2-3*, are preceded by a number which indicates the function key which can be pressed to invoke that item. That is different from *Lotus'* current version. There are also responses available within the menu structure which give *VP-Planner* significantly more control and flexibility in determining how the program interacts with the operating system and with the printer.

There are even more differences between *Lotus 1-2-3*, Release 2 and *VP-Planner*. Release 2 added features which were not in the original version of *Lotus*, and Paperback's stated philosophy with *VP-Planner* is to maintain compatibility with the 1A version of *Lotus*. *VP-Planner* also uses a sparse memory matrix, which allows a much larger spreadsheet in a given amount of memory than does *Lotus*.

In my opinion, much of *VP-Planner's* success came from Lotus' arrogance in pricing. Also, many of the new features in Release 2 were so rarely used that corporate buyers of spreadsheet software felt that unprotected cheap software which was identical to or better than the original stuff made better economic sense. So how compatible is it?

How compatible is compatible? I have a variety of spreadsheets which are macro bound. All of these have made the transition from *Lotus* to *VP-Planner*. In fact, all of the spreadsheets which I have (some of which date to *VisiCalc* days on an Apple II) ran perfectly in *VP-Planner*. There have been reports of some bugs in *VP-Planner*, but the latest version I have (1.5) does not have any of the problems I saw in earlier versions, nor has it bitten me with anything unsuspected since I loaded it onto the hard disk.

On the other hand, not all spreadsheets created by *VP-Planner* will run in *Lotus*, because *VP-Planner* has features not found in *1-2-3*. The graphic section of the program saves graphs which are compatible with other Paperback Software products and may not be used with other products designed to work specifically with *Lotus* output.

VP-PLANNER'S UNIQUE FEATURES

The differences between *VP-Planner* and *Lotus* are interesting. When you pick up the *VP-Planner* documentation, the entire first half is devoted to the concept of a multidimensional database. This is presented as the package's most important feature, the one that makes the product significantly better than and different from you-know-who.

When first booted, *VP-Planner* greets you with a menu which gives you the option of running the spreadsheet only or creating and editing the multidimensional database structure. If you do not use the multidimensional database, this choice allows you to load only the code for *VP-Planner*, which leaves more memory available for your spreadsheet.

Additionally, you can set a path for your files at this time, as well as look at a directory. The opening menu also allows you to transfer to and from DIF files or quit and return to DOS.

So, what is a multidimensional database? Do I really need one? If I had one, what would I do with it?

By giving you a look into a database, *VP-Planner* adds further dimensions to the usual three—time, accounts and products, for example. It gives you the ability to relate two additional categories into a single cell. *VP-Planner* can and does allow you to set up applications which view combinations of up to five things as slices through a database.

Picture, if you will, a series of identical spreadsheet templates, all lined up one behind the other. It might be a set of department budgets, it may be sales forecasts from various divisions around the world. A vertical column in each of those templates represents months of the year. The rows represent product lines. The intersection of the rows and columns (cells) contain the projections for the product lines. The spreadsheets themselves represent districts, or departments or the like. The multidimensionality of *VP-Planner* describes its ability to address any of the slices (horizontal, vertically) back through time and/or back through locations. If you have used the automatic linking ability of *MultiPlan* to link spreadsheets, you have some concept of the greatness of automatic updating and consolidation. Expand that to doing the work interactively at the keyboard with the slices as you wish, and you can see the usefulness of this multidimensional modeling.

Now add to that the ability to read and write *dBASE* files as part of your spreadsheet effort, and you begin to see that although *VP-Planner* is an advertised "clone" of *Lotus 1-2-3*, it really moves into a genre all its own, using the spreadsheet metaphor as the basic implementation template. Whether the everyday user is sophisticated enough to need or appreciate these features is another question.

There are also some additional features built into *VP-Planner* which are very helpful and which do not reside in *Lotus 1a*.

VP-Planner has what's called an "AUTOKEY" command, which keeps track of your keystrokes automatically and stores them as macros. This, as any macro builder knows, will greatly reduce the headaches and time in building and debugging complicated macros.

A ZERO column width column also is available. You can use it to hide macros or to help set up the display for producing specific reports, or even to hide intermediate fields and formulas which would, in your opinion, clutter up the spreadsheet with numbers which get in the way rather than add to the solution.

The RANGE NAME sections also provide a range directory which shows you all the range names and their cell addresses.

In the graphics mode, you can recall and look at a previously saved graphic with a Look command.

You can use up to a 15 character password to protect your files from strangers. However, *VP-Planner* uses an encryption and protection algorithm that's different from the Lotus version, so that there is no compatibility in this area.

VP-Planner will also read files with extensions other than ".WKS" so you can read spreadsheets created directly by *Lotus 1-2-3 Release 2* or *Symphony* without having to rename them first.

CONCLUSION

VP-Planner is indeed a workalike of *Lotus 1-2-3 release 1A*. It also contains the ability to use the spreadsheet as a window into both *dBASE II* and *dBASE III* files. And it allows linking of spreadsheets in three dimensions with extracts of data available in two additional slices. The combination of these factors, plus the low price for an unprotected version, makes it a superb purchase. (Paperback Software International, 2830 Ninth St., Berkeley, CA 94710, 415/644-2116.) □

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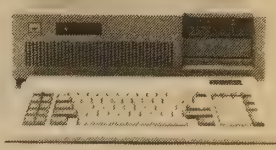

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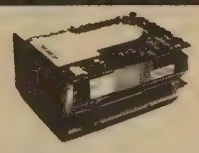

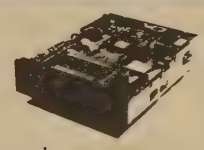

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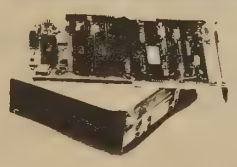

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The Portal System:

Fast And Friendly Regional Teleconferencing

By Corinne Cullen Hawkins

In 1984, Phil Sih and John Little realized there was a great marketing opportunity for an all-purpose communications service. Online since 1986, the Portal System offers speedy, flexible communication that's easy for even the inexperienced user to learn and work with.

"John and I had both been involved in computer based communications since the mid-70's," says Sih, "but things started to heat up—we started to see a profusion of bulletin boards, the press became interested in online services as a subject, people were talking about their uses, and the technology was rapidly getting cheaper. Throughout most of 1984 I spent time calling up a lot of services, talking to a lot of people, gathering primary information."

This extensive research on available options and the needs of the marketplace resulted in the modular construction of Portal, designed from the ground up to be expandable as needed. Says Sih, "We're not building just a conferencing system, or just an e-mail service, or just a bulletin board. We're building a communications service." Sih's and Little's intent in creating Portal was to make it an "electronic reflection" of the community—where people can augment what they usually do in their business and personal lives through computer-based communications.

SPEED

Little's passion for speed—he races cars for a hobby—is reflected in the system's performance. Typically, Portal responds immediately when the user enters a command. Sih takes pride in Portal's response time and points out, "A lot of line services stick in artificial delays to 'up' the rate. We have zero padding." Designed from scratch, the system runs on a UNIX substrate, but it uses no UNIX commands. (This makes the system faster, but it also means no UNIX access for users. This can be a drawback for some.)

The hardware is another reason for Portal's unusually high speed. Portal runs on two Sun 3/160 workstations, each with twice the power of a large Vax 11/780 mainframe. Portal offers up to 2400 bps access with MNP Level 3, which includes error correction. Because Portal uses 9600 bps locally, it has no problem keeping up with users' throughput. Portal has more than enough phone lines to handle current traffic levels, so users don't face frustrating busy signals; new lines will be added as soon as the need arises.

Another innovation which makes using Portal efficient is the "Subscription" area, created by Little. For those who read a lot of conferences, "Subscription" speeds up reading time by eliminating the need to go from conference to conference. All you have to do is log in and check your Subscription area; all new articles from every conference on your subscription list will be there. If you don't finish reading them all before going on to something else, Portal marks your place, and you'll see the rest of the articles next time you check. Adding and removing conferences is easy, using the "subscribe" and "unsubscribe" commands, and this gives users the flexibility to customize their online "magazine."

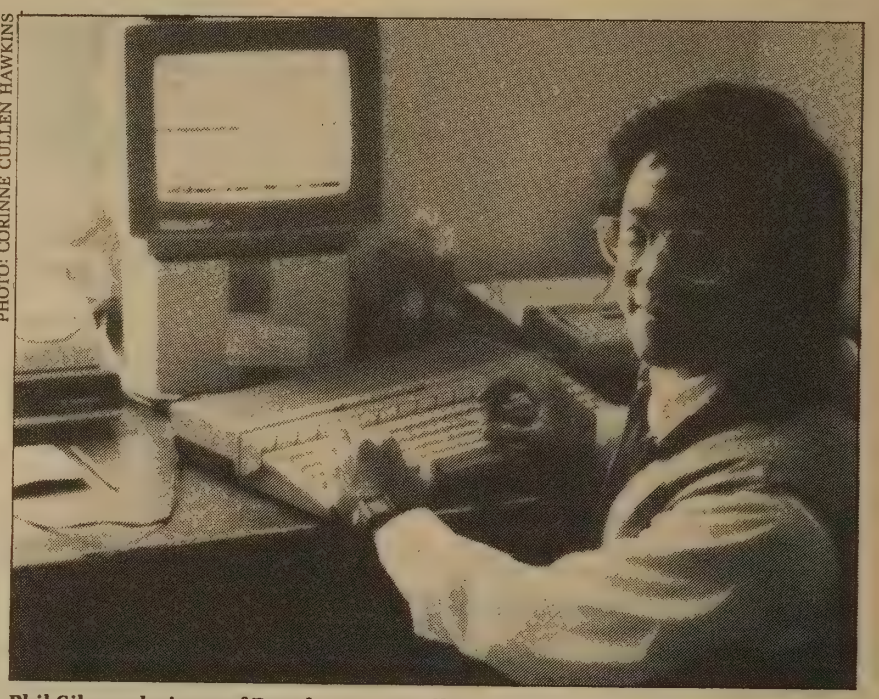
USER-FRIENDLY FEATURES

Speed, however, isn't worth much if the system's incomprehensible, so Portal's creators have thought through a design that is easy to figure out and easy to use. Although users are provided with a 60-page guidebook, even non-computer literate people can get online without training. Most people use the guidebook only for more advanced functions like sending and receiving gateway mail or posting items in the USENET gateway. With an hour or two of trial and error, exploring the system, just about anyone can get up to speed. All the commands that can be used at any particular time are listed at the bottom of the screen—which encourages users to experiment and learn by doing. There's no need to worry about damaging the system with some unfortunate error—the worst that could happen is a user would be knocked off line, and, according to Sih, that hasn't happened at all since Portal's been using the third release of its conferencing software.

The Portal System is logical—it's designed like an upside-down tree because, as Sih explains, "That's the way most people think." At the top right corner of the screen is a description of where you are and what you're doing—so you'll never be "lost." If you're still not sure what to do, you can always type in the "top" command, which will take you to the top of the Portal hierarchy and the Main Menu. "Done" will take you to the next-higher level from where you are in the hierarchy; if worse comes to worst, you can logout from anywhere in the system and try again.

There is fully explanatory "Help" available at every level, and every form and every command on Portal is documented in the on-line help subsystem. This provides immediate answers to "What do I do now?" kinds of questions, as well as some background information. It's kept

PHOTO: CORINNE CULLEN HAWKINS



Phil Sih, co-designer of Portal, an unusually powerful and easy-to-use conferencing system based in the South Bay.

Says Portal's Phil Sih, "We're not building just a conferencing system, or just an e-mail service, or just a bulletin board. "We're building a communications service."

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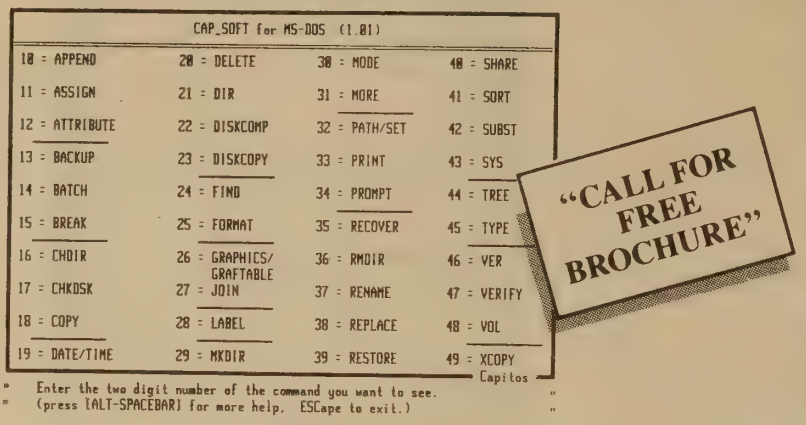

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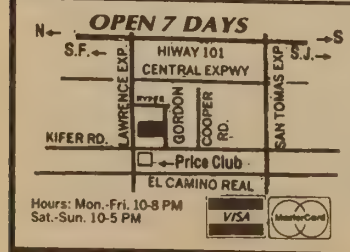

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Portal has the capability to provide information facilities for user groups (or any type of information providers) who don't want to bother setting up their own system.

current and is the most accurate source of information on using Portal. Because of this, online system learning is fast, and users develop confidence quickly. "Its a full disclosure system. There are no hidden commands or other bizarre things," Sih comments. "We try to give the user a lot of control."

ACCESS TO MAIL AND NETWORKS

Portal's e-mail (electronic mail) gateway has a complete autorouting function, so the user doesn't need to remember or type in long addresses or paths, even for a site on another continent. E-mail can be used to send messages to about 60-70 other e-mail domains (over 10,000 sites), including UUCP, BITNET, ARPA, and CSNET. Portal is probably one of the best-connected networks available.

Portal is the only system to have fully autorouted mail that gives you the stat information on site so you can check it before you send your mail. It's probably the only system that stops you from sending mail to a wrong address on a local system. And if you're in doubt about Portal's ability to reach a particular site, the **check_address** command will let you know that too.

One of Portal's slickest features is its gateway system to USENET. (USENET is a public domain, mutual aid network connecting about 5,000 computer sites on four continents.) The Portal designers took USENET and gatewayed it directly into Portal conferences, so accessing USENET is as easy as using a regular Portal conference. As a matter of fact, it's the same thing. The gateway is two-way, so you can send as well as receive USENET material, without ever leaving the Portal conference.

Another advantage Portal offers that veteran USENET users will appreciate is the way it organizes USENET material. USENET's vast amount of data and conversation is a great resource, but it is organized (or rather un-organized) so that many newsgroups under a large general heading (such as "computers" or "recreation") have their articles randomly interspersed. Normally, this makes it difficult to find what you want quickly and can be a great waste of time. Portal, however, separates each set of articles into its own collection, so the thread of a specific discussion isn't interrupted. This also makes it a lot easier to find a specific article.

To users more accustomed to local bulletin board systems, Portal might seem unnervingly vast at first. But that vastness was planned in order to accommodate a wide range of applications—some of which have yet to be dreamed up. Sih and Little research information needs on an ongoing basis; besides providing the usual bulletin board and e-mail features, which are good for the general needs of businesses and individuals, the designers have pinpointed particular information needs. One result of their research is the Electronic Press Room—an area where companies or PR agencies can make available press releases, backgrounders, fact sheets and other information. It conveys information immediately, but like a database, it stays around and is easy to find. The information is public, and available to all Portal users.

Portal has the capability to provide information facilities for user groups (or any type of information providers) who don't want to bother setting up their own system. This is a new approach to online services—a full communications service. In Sih's words, "We're the only people who combine all the aspects of Matcher, Meetings, Mail, so forth. We're a real modular system, and we view ourselves as a communication service. We're in the business to provide what people need and want."

Portal charges $4/hr regardless of time of day and access speed. It costs $15 to start a Portal account; this includes three hours of system time and the 60-page guidebook. There are no monthly minimums or other charges. Portal supports a low-cost nationwide access service which will allow people from around the US to call in at rates far less than direct dial. (For more information on national access call 408/725-0561.) Portal is also one of the few systems that accepts checks as well as credit cards. (Portal Communications Company, 19720 Auburn Drive, Cupertino, CA 95014, 408/973-9111 voice, 408/725-0561 data, 300 or 1200 bps, 408/725-0569 data, 2400 bps.) □

Computerizing Your Business

. . . a buyers' guide for businesses and professionals

Analyze Your Needs

When Julian Systems is approached to develop a business computer system, our first question is, "What do you need your system to do?" You can prepare in advance for this all-important question by examining the way that your business works.

Ask yourself a few questions:

- What are the major tasks that keep your business running?
- Of these, which would benefit from automation?
- How many individuals are involved in these tasks?
- What information do they need to share?
- What does each need to do individually?
- Do you need telecommunications?
- What computer systems are your employees familiar with or attracted to?

The answers to questions like these will provide important clues in determining the right combination of hardware and software, to maximize the effectiveness of your investment.

Select Your Supplier Carefully

In most cases, the key to successful computerization lies not in the hardware, but in the supplier.

To get the most out of your computer system, you need expert consultation from the very beginning. Your supplier should be able — and willing — to spend the time necessary to customize the system for your business.

An effective and knowledgeable consultant can help you select the best software, steering you clear of products with functional limitations and "bugs" while assuring full compatibility. And he or she should either know your business, or be willing to take the time to learn.

Look for a supplier who can be the single source for all the components of your system. This will not only simplify the ordering and installation process. It will also make it easier for you to build a relationship with your supplier. And you'll have only one person to call when you need help.

Most importantly, look at your potential supplier's track record. Request two or more references, and call them. Make certain that the supplier has dealt fairly in the past, and has supported his products effectively. Every business computer system — no matter how simple — will require support. And every business client deserves it.

Consider Leasing

Cashflow management is one of the primary cornerstones of a successful business. And one of the best ways of making capital expenditures while keeping cashflow in line is leasing.

A well-structured lease-to-own plan will allow you to:

- Meet budget goals
- Conserve capital and credit
- Obtain a manageable, fixed monthly payment
- Avoid restrictive covenants
- Generate a return on freed capital

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It doesn't take much imagination to see how a leasing plan like this can allow you to make capital purchases while keeping your cashflow picture bright.

Service Contracts

Business computer systems see daily, full-time use. And if your system should fail, it could seriously hamper your ability to do business. So, no matter what computer system you select — or how reliable it may be — be certain that your supplier can offer you a service plan that fulfills your needs.

After all, most computer industry warranties end after the first 90 days. From there on, you're on your own. And computer repairs can be expensive. The cost of a service contract, by comparison, can be pennies.

At Julian Systems, we've developed a unique service plan for our business clients, called *Julian***Care**™. It's reasonably priced, and it offers coverage that no other computer supplier can equal.

*Julian***Care** is available in three levels of coverage. The most basic plan, **Carry In Service**, provides for repair and/or replacement of the covered equipment, including labor — but the customer must bring the machine to us. This plan is often sufficient for sole proprietorships.

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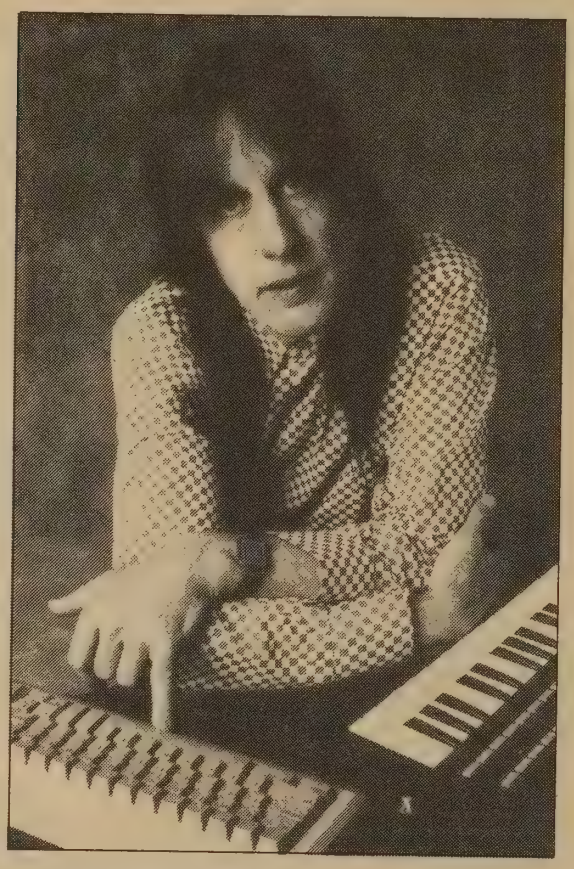

PHOTOS: JIM MARSHALL

By Charles Bermant and Mary Eisenhart

Todd Rundgren's computer obsession began as a teenager, when he would visit the local telephone company's billing office after school to learn how to use the cumbersome punchcard-driven mainframes. "They were indulgent," he recalls of the Bell Tell crew. "Maybe because everyone was a customer of theirs. Also, it was unusual for somebody who was just getting into high school to show some interest in this."

Despite detours into rock semi-stardom, both as a soloist and with Nazz and Utopia, the interest still flourishes. Rundgren was one of the first to elevate overdubbing beyond the curiosity level, well before MIDI. Currently he's become an expert on programs that turn a PC into a paintbrush.

As Rundgren has delved more deeply into the computer universe, there have been fewer records. For over a decade he cranked out more than an album a year. Today, his most recent new record is *A Cappella*, released in September 1986. While that album's sales were less than overwhelming, it provided a metaphor for Rundgren's entire career. There was the buoyant pop tune aimed at the singles charts. There were heartfelt ballads along with a cover of an old soul song. There were flashes of eastern intrigue and a hyperactive drenched-in-dementia rocker.

At the same time it was unlike any album Rundgren—or anyone else—had ever made. Handclaps aside, its every sound originated from his mouth. His voice was overdubbed, modulated and synthesized, pushed to sound like guitar, keyboard, bass and drums.

He's also been performing recently as a soloist, backed only by a wall of electronic equipment. In performance Rundgren uses *Texture*, a program written by Utopia bandmate Roger Powell, driven by an IBM PC compatible, and an Apple Macintosh to control the accompanying video effects. He adds live keyboards, vocal or guitar to the programming, resulting in a full band sound controlled by one person.

This setup replaces a tape cartridge system he used for almost 15 years. While some fans prefer the taped backing tracks, long-time sound man Chris Andersen feels the *Texture*-ized system is both better sounding and easier to control.

It still looks odd, one performer against a wall of sound. It's not a matter of hiding behind the technology—this setup makes him far more vulnerable as a performer, since there's nothing for him to fall back on.

Currently, he is writing the music for a Broadway production of the late Joe Orton's "Up Against It" (once intended as the third Beatles movie). And he is always adding to his production credits, which range from Badfinger to XTC (his latest is Bourgeois Tagg). All along, he reflects the transition into the personal computer age, proving the new machines need not lack soul.

"When I was growing up there were two things that I wanted to be, either a computer programmer or to be in a band," he says. "The real reason I became a musician is because it was something that required a natural talent that I had, and I didn't have to go to school. All I had to do was 'woodshed,' take my guitar and practice it until I got good."

"In the same way," he adds, "the people who are writing the good software today are good not because they went to school—they taught themselves. These are the people who are providing the creative force behind the whole industry."

Historically, Rundgren has been far more interested in artistic expression than wealth and fame. Of his band Utopia, which has been more or less on hold for quite some time, he says, "It's still on sabbatical, sort of suspended animation. It's not death but the next best thing. There doesn't seem to be any need for any of us to do it right now. Instead of making records because we enjoy it, we have always had it in the back of our minds that this was our financial well-being on the line. We will not make another record until we can do it without this pressure." He adds: "In order for anything to be subsidized there is marketing involved. I don't care if people tape my records and pass them around because I made them to be heard. If I don't make money off it, that's unfortunate, but it's not the reason I make music."

He's quite happy with the degree of relative obscurity that allows him to pursue his creative interests: " I don't care to promote myself. I'd like to be financially comfortable. The biggest drag in the world is having to think about money. I have no patent desire to be famous.

"Famous people get flak from all directions. People will not let you alone when you're in a restaurant and want to eat. When you don't want to think about it you don't have a choice. Somebody as famous as Bruce Springsteen or Prince, a certain part of their life is gone forever. They can't just get up and pretend to be normal. People are always going to be reminding them of what it is they do and what they are and what they mean.

"It makes it hard to get a certain equilibrium. I don't want to be constantly reminded of what other people think I am—I have too much trouble trying to figure it out myself."

The immediate problem he perceives in making computer technology available as a tool to musicians and artists lies in the area of user interface —the process by which the human tells the machine what to do. He feels that the interfaces currently available are designed to facilitate control of the software's capabilities rather than providing what the user wants or needs. These

Charles Bermant is an Associate Editor at PC World and has written about music for a variety of publications.

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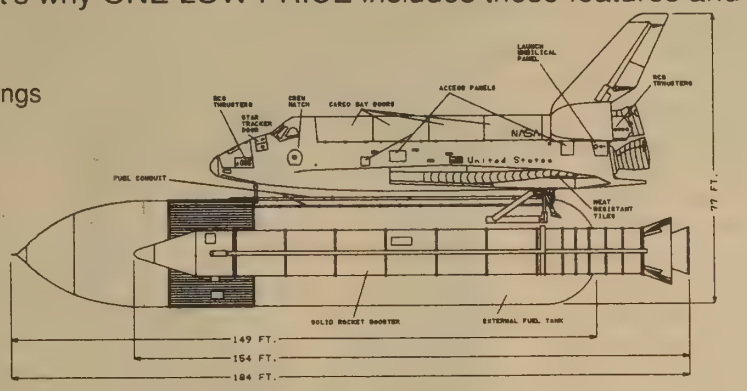

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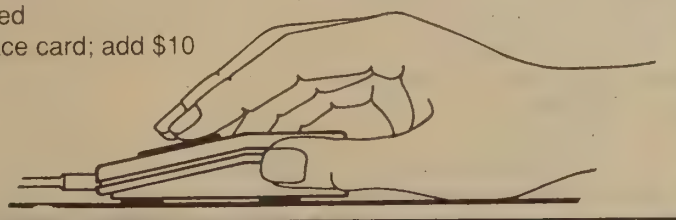

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interfaces rarely conform to the natural attitude that the user has about the software, which greatly diminishes the usefulness of the tools they provide. Rundgren, on the other hand, is working on interfaces designed to keep the machine unobtrusive and let the artist or musician work.

Technology, however, is no substitute for creativity. Just as the world's slickest word processor won't do much good if you don't have anything to say, better music and graphics products may reduce the need for technical skill, but they're no substitute for ideas. Says Rundgren, "Being a musician nowadays doesn't necessarily require a whole lot of musical talent. Same thing with visual artists—technique takes a back seat to so-called inspiration. Whatever it is you are trying to convey is the most important thing. When you're recording music the most important thing is the song—the technique by which you perform is secondary."

What impact have personal computers had on the work of musicians?
I guess the biggest impact that computers have had is the fallout of technology that was essentially digital and could be considered specialized computing in a certain way, like digital sampling computers, which essentially convert sound into numbers that can be stored and re-played out of a machine. Musicians are familiar with that as a kind of thing you have to have—some kind of sampling keyboard. This is a digital process that could only have been simulated originally with computers—you just get rid of all the hardware that you don't need and what you have left is an Ensoniq or Mirage or Fairlight or any of the other more or less expensive digital sampling keyboards. Also the DX-7 line of machines, which use digital FM synthesis.

You have to almost be something of a computer programmer to effectively operate a DX-7—they have so many interrelated parameters and things, they even use computer jargon like "algorithms"—each sound is the product of a certain algorithm, a combination of digital synthesizers. To effectively program a DX-7 you almost need a computer to translate—the problem being that the DX-7 has such a tiny little information window and you can't see all the things that are going on inside it. I think most people who do any kind of serious programming with DX-7s hook up a computer to the DX-7 and use that.

Do they buy commercial software or write their own?
I think you would usually buy a commercial package. For instance, OpCode Systems makes a number of packages—a DX editor for editing sounds and a DX librarian for saving sounds. Digidesign has a program for editing and saving sounds, I believe.

Digidesign also has an interesting internal format that they convert digital data they've collected from various instruments, so you can have samples from one company's particular synthesizer in a certain format and then transfer it to another company's synthesizer. Essentially they have a lot of different translators and a common format, so once you've got it into the Digidesign program you can pass sounds around. People can give each other disks of sounds that they've sampled, and they don't necessarily have to be sampled on the same instrument. As long as the Digidesign program has a translator for your particular instrument, you can have sounds that are sampled on any instrument.

"Whatever it is you are trying to convey is the most important thing. When you're recording music the most important thing is the song—the technique by which you perform is secondary."

Has MIDI facilitated the process of linking different instruments and machines?
That was the idea. It's a pretty cheesy keyboard nowadays that's made without MIDI. Manufacturers would find themselves at a competitive disadvantage with any keyboard without MIDI.

What that also forced to happen was that to take full advantage of MIDI, certain things had to be standard as well on the keyboard, like a velocity sensitivity and pitch bending and modulation and things like that. That all got more or less standardized, even though various keyboard manufacturers can devise their own devices—for instance, Yamaha has a breath controller that you plug into the DX-7. It's a little thing you stick in your mouth and blow into, and it can control various aspects of the playing dynamics. If you've got a trumpet-like sound, or flute-like sound, on the keyboard, then you can put those dynamics into it by blowing on it, the same way that a trumpet player or flute player would. You can more accurately capture the dynamics of a wind instrument.

So you can play your guitar, or saxophone or whatever it is you're adept at, and control synthesizers at the same time you're playing your own instrument. You can control elements for a whole band if you're just one person. There are some software programs now that allow the computer to improvise on things that you put into it, so you could be playing your instrument and the computer would be listening to it and devising lines of its own. There are programs that can determine what tempo you're playing at, and follow that tempo.

MIDI to most people—the average user who doesn't do a lot of recording or sequencing—MIDI is just more hands. In other words, you simply use one keyboard to control the input to any number of keyboards, as many as you can patch up. It also can allow you to move the sound-producing part of your synthesizer setup to a remote location, and all you need is one keyboard controller.

Why might you want to do that?
The purpose of doing that depends on your style as a performer—of course there were the Rick Wakeman/Keith Emerson days, where you were trying to impress people by stacking as much stuff up on the stage as possible. They figured people looked at it, and if it *looked* big then the sound was big.

Nowadays musicians aren't playing the Cow Palaces as much, and musicians who have to play smaller places want bigger sounds. So now if you wanted a wall of sound approach, rather than having to have a keyboard and a place to put it for each component of the sound, you can have very small modules—Yamaha makes a very small module that looks almost like a telephone answering machine, and it has a lot of the sounds that a DX-7 can create inside it. All you have to do is hook a MIDI cable into it, and you can stack them up as high as you can stack them. You could stack 20 of them up and it wouldn't be much bigger than a guitar amplifier, in terms of how much space it takes up. Whereas formerly you would have to have a keyboard, have to find a place for every single keyboard, and have to whip around playing all of them.

There was no MIDI when Keith Emerson and Rick Wakeman were hauling out their synthesizers. I think that's an advantage—space savings. You don't have a truckload of stuff to move from gig to gig, you only have a suitcase-load of stuff.

That's a great advantage, having all this compatibility between instruments and various new ways to produce sounds.

I don't need a synthesizer to make music, I try to keep that idea as much in the forefront of my brain as possible when I'm trying to create.

It's not any different than it ever was. It wasn't any different when the electric guitar became a popular instrument and everybody and his brother had one and most of them couldn't play it. It's the same thing with any kind of instrument—it doesn't matter how sophisticated a tool becomes, there will be people who will develop the skill to use it effectively and then there'll be people who just make noise.

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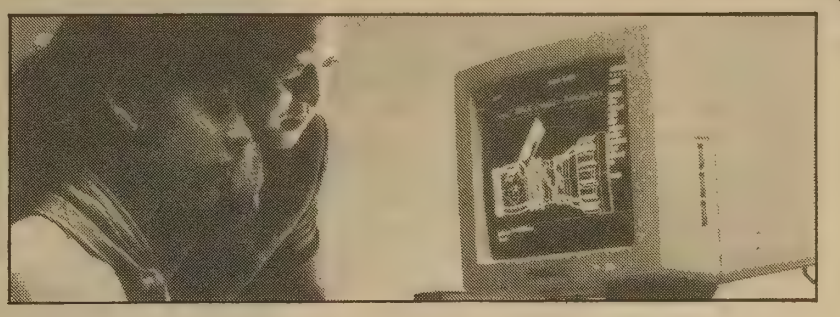

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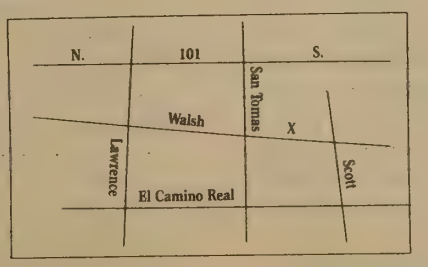

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iods, when there's a lot of new technology, new tools, new media of expression, the people who will lose out will probably be the listeners. Because there'll be a few serious people—the serious people are usually the ones who make the dilettantes aware of what's going on. And once the dilettantes become aware of what's going on, it becomes quickly devalued by a lot of unskilled labor. A lot of mediocre music, essentially, and so the people who listen to the music will be the ones who get the bad fallout. The dilettante is kind of like the surrogate listener—they'll fool around with it, but they don't really want to apply themselves to learning about this in any kind of comprehensive manner because they're dilettantes—they'll move on to the next trend once this one has been depleted. Whereas the people who will really get involved with these things—their curve is slower and longer and the depth of their involvement is much greater.

What about the complaint that all these computers are putting musicians out of work?
I don't think that really good, creative musicians have ever been out of work. That's the whole point. When you say musicians, there are a lot of people who call themselves musicians who make money off of music, but that's altogether separate from people who keep music a vital medium. The people who create the things that everybody else imitates and capitalizes on. It's refreshing that every once in a while some of the originators will make money off of their own creations [laughs]. There's such a rush to capitalize on something new that it's quickly devalued.

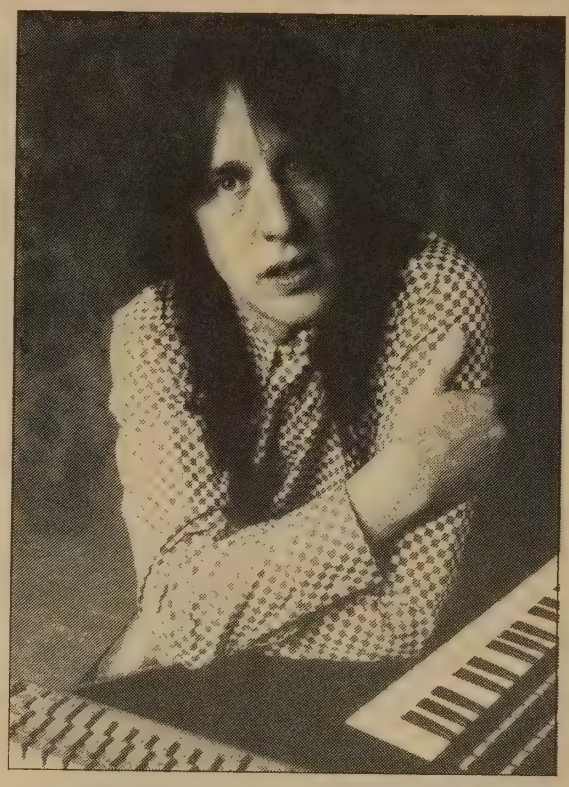
Onstage, you use an IBM compatible to control the music, but a Macintosh for the graphics. What's the difference between the two environments?
I was running *Texture* on an IBM, but I don't particularly like IBMs. I was running it on an IBM because it was written for an IBM. It was the easiest thing, because I'm not really into this whole sequencing business. To sequence a bunch of songs for me to take on the road and have the computer play is pretty much an ordeal. The easiest way I could get through the ordeal was to have Roger [Powell] help me with it. Roger wrote the program, so *Texture* was an obvious choice.

The IBM was made for the business world, and since I'm not a businessman I don't have much interest in their line of computers or the method of marketing. I'm really essentially involved in personal computing—I don't care what the business world does.

Everything in the IBM scheme of things is based less on a philosophy of computing than a philosophy of marketing. The only reason that the new IBMs have graphics and MIDI is marketing—everybody else has them and IBM is going to look pretty antediluvian if they don't.

There's always a lot of software for IBM, but it's the type that really defines the personality of the machine. There's such a great preponderance of business software, and the available programming tools are for people who want to write more business software.

IBM has never been interested in the casual user of computers, those who use them at home, or hackers—it's interested in people in a good solid rich dependable market, the business community. IBM wasn't thinking of me when they made the machine. Steve Wozniak [creator of the Apple II] was thinking of someone like me, the guys at Atari and Commodore are thinking of people like me more than IBM is.



"I don't think that really good, creative musicians have ever been out of work. That's the whole point. There are a lot of people who call themselves musicians who make money off of music, but that's altogether separate from people who keep music a vital medium."

The Macintosh user interface seems to get the programmers' creative juices flowing, it frees them from having to think about "How am I going to represent the interface in all this?" and gets them concentrating more on the wacky idea.

My essential involvement at this point in the computer field is assessment and design and making suggestions about interfaces. Particularly for graphics, but for anything, because I've been involved with the machines for so long and because I actually have applications for them. Since I've been involved in music production, since I've been involved in video production, and the application of computers in both of those fields, I have some understanding of how an interface should operate because I have an understanding of things that I want the machine to do.

Most people who write programs get so involved in coding that they never get a chance to actually use it in a practical situation. A lot of breakthroughs in terms of machine abilities come about because somebody's writing code and they suddenly discover a possibility. Unfortunately they don't know how to convey this to the user, and so I'm trying to look at it from the other end, to think of it constantly in terms of what is it that I want the program to do. Let somebody else figure out how to make it do that, because usually since I know about writing code and I know about data structures and things like that, I can make a little bit more reasonable demands, more coherent demands.

A user who doesn't have a lot of experience with machines won't even know how to go about telling somebody what it is they do or what it is they want, describing the process, before you can even integrate the interface of the machine with the process—creating pictures or making music or something like that. I guess that's the reason I'm in this position, because I have made pictures and music, and I also have written programs, so I understand that particular area.

What would you like computers to do that they can't do yet?
That's not an easy question. That's the essence of interface design, it isn't a patent thing.

There isn't a wall you've hit that you wish wasn't there?
The most frustrating thing, I think the thing that's held things back the most, is that there's no standard of input and output. MIDI is a standard, and that's been a big breakthrough in terms of computers, because MIDI is essentially a digital interface, so it's information that can easily be stored and manipulated inside a computer.

But the problem beyond that is that computers don't have the same bottom-line standards in terms of the graphics, the display standards, and things like that, so when people are designing interfaces they have to design three or four interfaces for all the major machines. In other words, if you were writing an interface for the IBM, you have to write it for the bottom line, which would be a miserable monochrome adaptor. But you don't want your program to be stunted, so you have another version that takes advantage of other things.

The Macintosh has only one kind of display, so anything you write for the Macintosh you only have to write one version. But if you're writing for the IBM, it's completely different from the Macintosh, and not only that, it's completely different depending on how much money you spend on your display card. It's essentially a conspiracy on IBM's part.

Things are getting to a standard, 640×480. That's a good thing and it should help move things along.

The reason things are behind is essentially proprietary things—IBM wanted to be able to make as much money as possible, so they made five different standards. And when they sold you the computer they didn't give you any of 'em. You had to buy one—when you bought the computer you couldn't see anything on it. Not only

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was the monitor extra, but the video card was extra, depending on how much video you wanted.

What do you find frustrating about existing interfaces?
Interfaces in general need work. They still require a certain amount of computer consciousness on the part of the user. Everyone has what they believe to be a philosophy of user interface, but usually it's coming from the wrong direction. It's usually 'we're capable of doing this, so we'll build a front end that allows us to control the things we're capable of.' That doesn't always conform to the attitude that the user has about the software.

A user has an understanding of the area that he's operating in. If someone wants to use a word processor, they already have a familiar metaphor for that—pencil and paper or a typewriter or stacks of pages.

So there is already a metaphor for that. A computer screen is flat and two dimensional, and a sheet of paper is also flat and two dimensional. When you start to get into other things where the metaphor is a little less flat, that's when people have trouble thinking up interfaces that make sense.

In order to free up the computer as an artistic tool, certain engineering concepts have to be built in. The artist doesn't want to have to worry about taking a ball-shaped object and throwing it at wall-shaped object, he doesn't want to have to play God and detect the point where the ball hits the wall and tell it explicitly to change direction. This has to be a result of natural physics. Very few interfaces have that built in.

With some systems I'm trying to be creative, but at the same time I'm spending equal or more energy trying to overcome limitations in the system. I suppose there is that aspect of any medium, but if I was just using a canvas and paints I would not be limited by the number of colors. I would only be limited in resolution in how small the brush was and how much control I had over my hands.

The reason I get involved in designing interfaces is that I want people to be ultimately doing those things. I want to make pictures myself, but I also want to see the pictures that other people make. Some other people have a more wacky visual sense, and I enjoy looking at those things.

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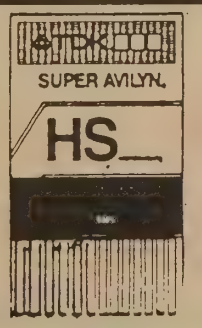

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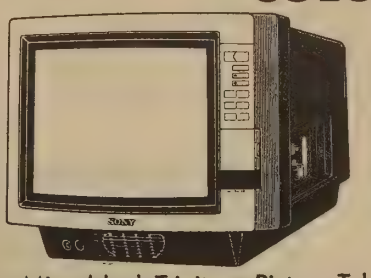

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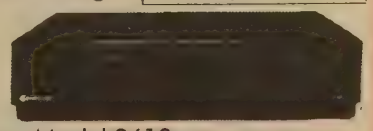

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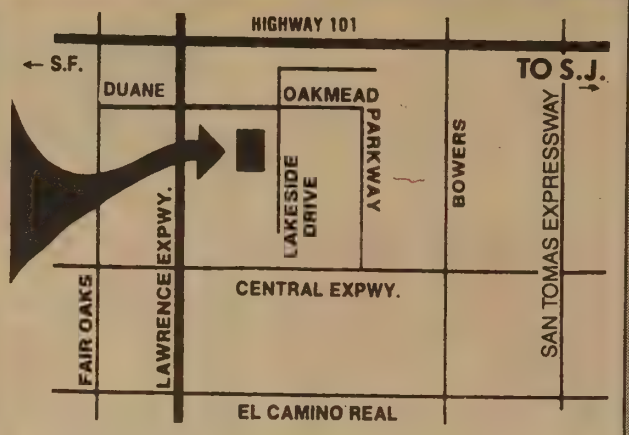

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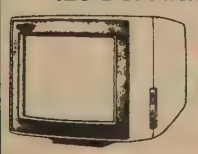

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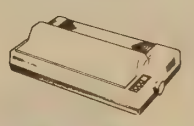

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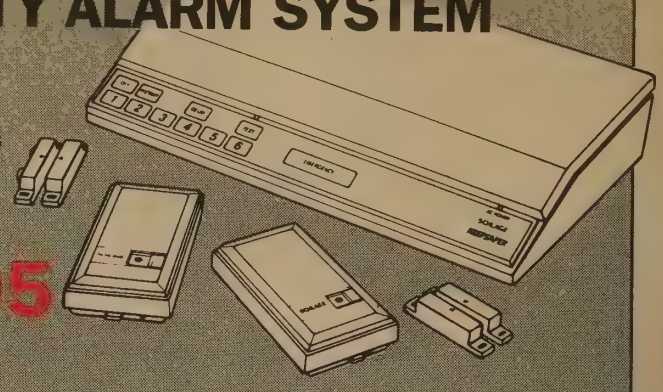

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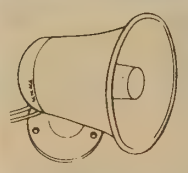

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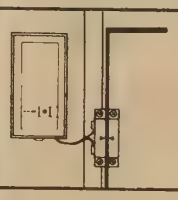

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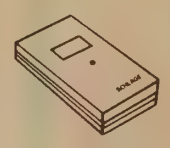

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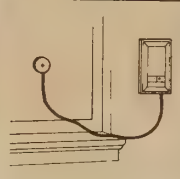

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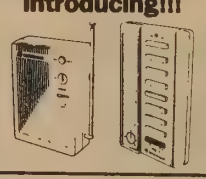

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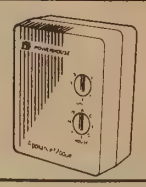

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Artists will seek tools that enable them to express their ideas with a greater degree of accuracy. After that, a technology will develop. Once the artist becomes familiar with that, he realizes other things that he wants. Then the technology has to catch up with that, and after that it makes demands on the artist again. The artist wants something, then the technology attempts to catch up, then the artist has to keep abreast of the technology again. It's a herky-jerky thing.

I'm involved in computer graphics, and I think what's happening now is that things are in kind of a woodshedding phase, because there are a lot of breakthroughs in terms of graphics that could be translated over into video production, and films, but we're at a point here where our reach is exceeding our grasp, and we have to work on the grasp part of it a little bit.

And that means standards?

It may eventually mean standards, fortunately or unfortunately. I mean, it's a tradeoff, standards are a tradeoff. They exist for a reason, obviously. They exist for the reason that every time there's an improvement in terms of capabilities, you have to relearn everything all over again, and it'd be nice if there were a standard that has enough room to grow built into it, that programs that took advantage of the standard wouldn't have to be rewritten every time a new capability was made available.

There are other theories that people including Apple are exploring at this point, because now that the computers that the average person can afford are becoming more sophisticated and can hold a lot more information—a lot more different, non-homogeneous information—there have to be more sophisticated ways of dealing with it. Hierarchical file systems—how do you maneuver your way through hierarchical file systems without getting lost or without it taking forever? There are limitations to nearly everyone's system at this point, and everyone's trying to figure out ways to overcome them. And nearly as soon as something becomes a so-called standard—Microsoft *Windows*, let's say—it becomes nearly obsolete. Because they were playing catch-up the whole time.

Is there a machine or software package you prefer for graphics applications? The Macintosh doesn't have color.

Well, there's no color, but there's also the new Mac which is standard in color and can handle color up to the resolution that is adequate for broadcast video capabilities. 640×480 is pretty much broadcast standard, and 24 bits of color. So there is an advantage to writing on the Macintosh—I'm writing on an old Macintosh now, in a portable language—C—so most of it will be translatable over to the other machine.

The other advantage is that a lot of what you write is not specifically what appears on the screen—a lot of what you write is behind the scenes, and any machine that facilitates that is going to have a lot of stuff written for it. With the Macintosh, Apple realized that if you give programmers things to make their job easier, then they will write a whole lot more software for your machine, and that will make your machine more appealing. And that was the smart thing that Apple did.

The measure of their support was that they put the toolbox ROM inside the machine. They gave you all of the common things that you would ever want to do. Very few other machines have that kind of sophistication. Amiga realized that of course that was the kind of thing you ought to do, so Amiga did it. Unfortunately Atari *didn't* do it, Atari left it to another program, and that's why software for the Atari has been so slow in

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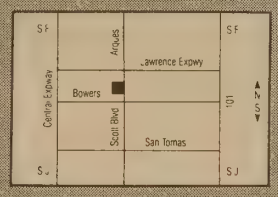

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"The reason I get involved in designing interfaces is that I want people to be ultimately doing those things. I want to make pictures myself, but I also want to see the pictures that other people make."

coming and why performance on most of the software is very poor. Because programmers are required to write every routine, the bottom-line graphics display routines and things like that if they want them to be optimum performance. You have to start at point zero. There's no hardware in the Atari that will, say, draw circles or squares.

What kind of work are you doing in graphics?
I'm working mostly on the interface, something that gives the user a cogent way to describe what they want the machine to do. Someone else will do the algorithms and create the pictures.

And this is eventually going to turn into a commercial package?
It may. Hopefully. I don't really care if it's commercial or not. I mean [laughs] it'd be nice to have another source of income, but I'm not hurting.

So you're doing it mostly for its usefulness in your own work?
It's a hobby. Yeah, I'd like to have a tool that I could use, that I could express myself with. The problem is, I haven't found one yet that I'll put up with the frustration of.

It's the descriptive language. Most people have some kind of intuitive way of describing something. Like if you were directing actors, you would say, stand over here and walk to there and things like that, and the problem with most of the smaller systems is you have to reinvent the wheel every time you do this. You have to describe, you have to pick the actors, and the actors are not only ignorant of what you mean by walking, they're so ignorant that they are essentially not alive. You have to pick their feet up [laughs] and stuff like that.

You're no longer thinking about things like the overall look of how this works, you're getting into, how do I tell this guy to make that motion? And you don't want to have to get down to that level; you want to be able to say, fly over to there.

You want to at least have the primitives available to you. Most systems are shy on the primitives. Most systems are shy on even how to describe the primitives.

Is that because programmers don't know there's a need for this?
No, everybody knows there's a need for it, there's just a lot of theories, and limitations in the machines. That's why we can expect to see a lot of different approaches to these problems now that the higher speed of the new machines and the greater graphic sophistication will allow them to

more understandable. In other words, you can

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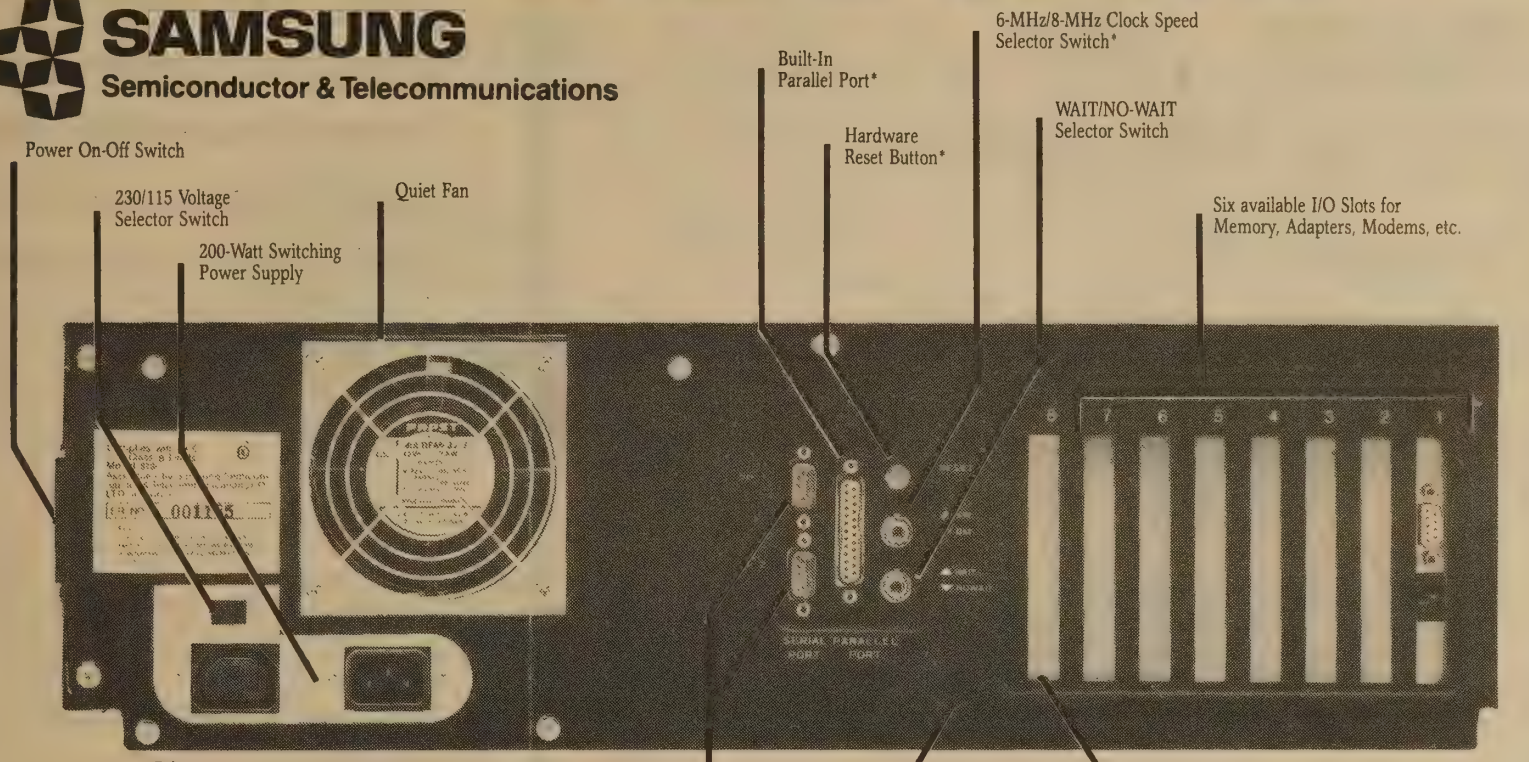

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"There are a lot of breakthroughs in terms of graphics that could be translated over into video production, and films, but we're at a point here where our reach is exceeding our grasp, and we have to work on the grasp part of it a little bit."

have some kind of real-time interaction, and see what the results are going to turn out like.

Who's going to be using this technology?
I think the first people that you want to reach are the people who would do it if it was possible, but they couldn't afford it. A lot of creative people are shut out of the process because they don't have enough money. They don't have access to the tools.

It's not whether John Q. Public and his family are going to start turning out MTV clips, or anything like that, but it is whether 10-, 20-, 50,000 art students across the country would be spending a lot of time creating things with a computer if they could get their hands on one that was really aesthetically up to par and had the performance.

I think that's something that could happen. I think that a machine—say like the Macintosh II or any machine that could display that much information, had the right software on it, and was affordable—machines would be walking out the door for applications like that. The kind of software that I'm talking about would be general-purpose software—it wouldn't be just art students, it would be the engineers and graphics houses and anybody who would be using graphics in that sense.

I think there's a lot of partitioning in the graphics process which it'd be nice to get over. For instance, most architects are just as capable of doing a freehand sketch of what they want as they are of doing a drafting of what they want. And software they use ought to give them the tools they need to do a freehand sketch in the same way it should give them tools for architectural drafting.

And there's no reason an architect shouldn't want an animation of what was going on, in three dimensions. There's no reason why an art student wouldn't want an animation, just because it's—artistic [laughs]. So I think there has to be some protocol for describing animations and things like that, that everybody agrees to.

There'll either be standards set by some standards committee—and unfortunately the problem that happens there is standards committees are usually made up of representatives of various companies who have vested interest in the outcome, and they will argue for two or three years [laughs].

The other alternative is the de facto standard—in other words, some company comes up with a standard that's so popular that everyone else has to subscribe to it or else they're out in the cold. □

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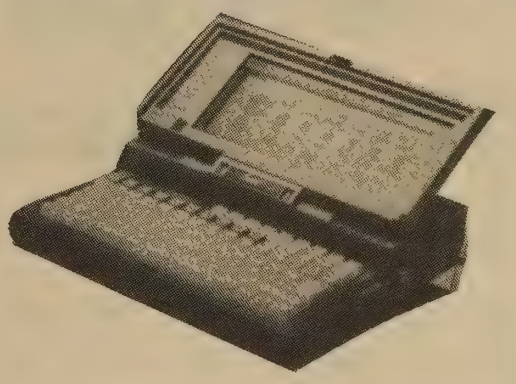

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First in a series of articles on music on the Macintosh

MIDI And The Macintosh: The Musician's Workstation

By Paul Craner

About three years ago, a specification for the transmission of digital information was formally announced. It differed from other communication protocols in that the information to be sent and received pertained to one thing, and one thing only: music. A few months later, in a totally unrelated development, a microcomputer was introduced which sported features that sounded more like a description of someone's home than a computer: desktops, windows, boxes, buttons, a few bugs here and there, and even a mouse! The communications protocol was called the Musical Instrument Digital Interface, or MIDI. The computer, of course, was the Macintosh.

Three years and several improvements later, the combination of MIDI, the Mac, and some truly elegant software offers the musical artist what had previously been available only to engineers, scientists, and superstars: a high performance, totally integrated workstation. Beginning with this article, we are going to look at the wonders wrought by the meeting of MIDI and Mac, at the specific software and hardware that made the meeting such an affordable success, and just how these elements work together to create a workstation for cultivating and exploring an artist's most precious resource: creativity.

THE WORKSTATION CONCEPT

Even to someone unfamiliar with computer jargon, the idea of a workstation is fairly self-evident: a place to work that allows all aspects of the task at hand to be addressed. For a musician, such a workstation must included a variety of software-based tools. First, the ability to capture a musical performance, played in real or step time, must be possible, or nothing else gets done. By **real-time** we mean a performance captured as it happens. By **step-time**, we mean a performance entered step by step, specifying the way the performance will sound—building it, as it were, piece by piece, to be played back later in real-time. Step-time entry allows for far more complex musical passages than otherwise might be possible, and for a great deal more control over when musical events take place. This first application of our workstation is known as **sequencing.**

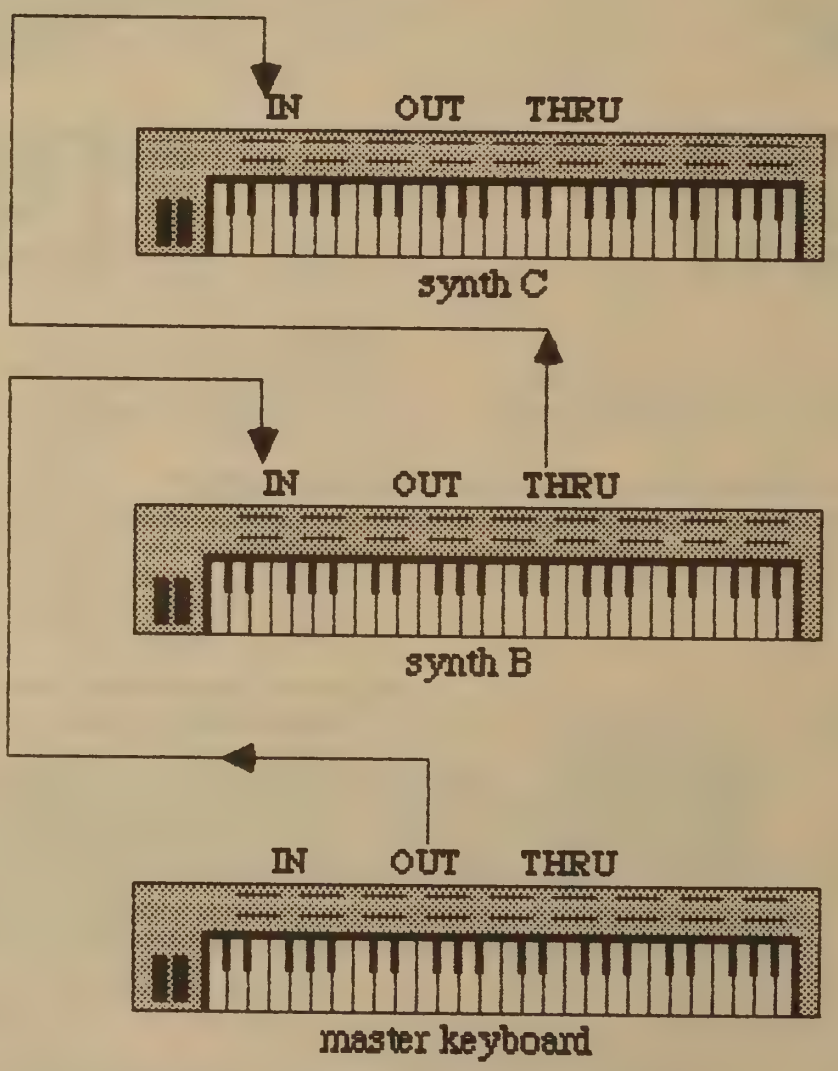

FIGURE 1: Daisy chain MIDI keyboard setup

The combination of MIDI, the Mac, and some truly elegant software offers the musical artist what had previously been available only to engineers, scientists, and superstars: a high performance, totally integrated workstation.

The next important feature of our music workstation is a "music processor," having all the advanced features of a good word processor, only using the symbols found in common-practice musical notation. In addition, such a program must be capable of converting the music already captured by the sequencer into notation, with the idea being that a musician can play the part to be printed much more quickly than if s/he had to "type" it in. Such applications fall under the heading of **transcription/notation**. Any musician will tell you that getting either a moment of inspiration, or a carefully envisioned musical gesture, onto paper in such a way that another musician could re-create it is one of the most arduous and absolutely necessary aspects of the compositional process.

The conversion of a freely played performance into the static symbols of music is fraught with all sorts of problems. It's something like trying to "talk" a document into the computer, and expecting it to print out with all the correct punctuation, type-faces, centering of titles, and so on. Because such a perfect realization of what was meant is impossible, the ability to edit the results quickly and easily is an absolute necessity. (As a brief aside, it is sometimes suggested that Artificial Intelligence, or some other new whiz-bang breakthrough, will solve the last remaining problems of transcription, but I am not convinced. Even a fine musician, who is anything but "artificially" intelligent, would have difficulty in notating the

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kinds of complex musical gestures that are possible at our workstation. Indeed, in some cases the symbolic equivalents of certain musical ideas don't even exist. Yet for many kinds of music, the transcription process has proven itself quite useful, and, as we shall see, the Mac's "look and feel" is ideal for smoothing out the rough edges of this particular application.)

Once a musician has composed a piece of music, and perhaps printed out the various parts, the ability to choose different "instruments" to play the piece is obviously important. In addition, the musician must be able to adjust a particular sound to the needs of a particular work. For some pieces, a particularly bright piano sound might be best, while for others, a rather muted one might be more appropriate. The ability to manipulate the kinds of sounds the musician is working with is another feature of our workstation. Known as the **Editor/Librarian**, such a program allows for the analysis, editing, and storage, of the various parameters that affect the sound produced by a wide variety of synthesizers, samplers, drum-machines, and "effects" modules.

The last two features of our workstation involve the use of tools for enhancing the compositional process, and for the development and sharpening of basic musical skills. **Compositional algorithms** allow a composer to define various parameters to the computer for the purpose of generating musical excerpts, which can often be quite useful to a composer. For instance, the computer could be told, "Compose a twelve note phrase, beginning on middle C, and ending on the same pitch-class an octave higher, moving upward by the same interval for each step." This algorithm would quite predictably result in a chromatic scale. An algorithm such as, "Compose a twelve-note phrase, beginning on middle C and ending anywhere," would have completely unpredictable results. At its best, such software permits a musician to describe the kind of musical excerpt s/he is after, in ways that strike a balance between total randomness and total predictability. On the other hand, **Computer-Assisted Instruction**, or CAI, is designed to always have the same results: the steady improvement of musicianship. Such programs can range from ear-training/sight-reading drills and harmony exercises to learning how to play with a walking bass-line.

BEFORE MIDI

Before the introduction of MIDI, the kind of workstation we have just described could cost as much as a small house. There did exist a couple of "affordable" music set-ups, but they were geared primarily to the serious (if forgiving) hobbyist, and/or the educational market. The **alpha-Syntauri** and the **Soundchaser**, both modeled on the workstation concept, use a pair of synthesizer cards that plugged into that immortal 8-bit workhorse, the Apple II. But these systems suffered from marginal sound quality, limited memory, timing problems, and software that did some things well, and other things not at all. Still, many musicians made good use of these "playstations," finding clever and unique ways of overcoming their inherent limitations. Even after the manufacturers of these products moved on to other things, add-on products like the **DX-1** sampling board and **The Interpolator** extended the life and power of these early systems, and many are still put to good use today.

Still, musicians knew so much more was possible. They kept one eye (and both ears) on their superstar counterparts (with their super-expensive set-ups), and dreamed of the day they could get their hands on such a workstation. The first step toward realizing that dream was MIDI. The step that has made that dream a reality is the Macintosh. But before we can talk about why, and how, and the specific software and hardware that brought MIDI and Mac together in such an elegant and powerful way, we need to look in some detail at the Musical Instrument Digital Interface.

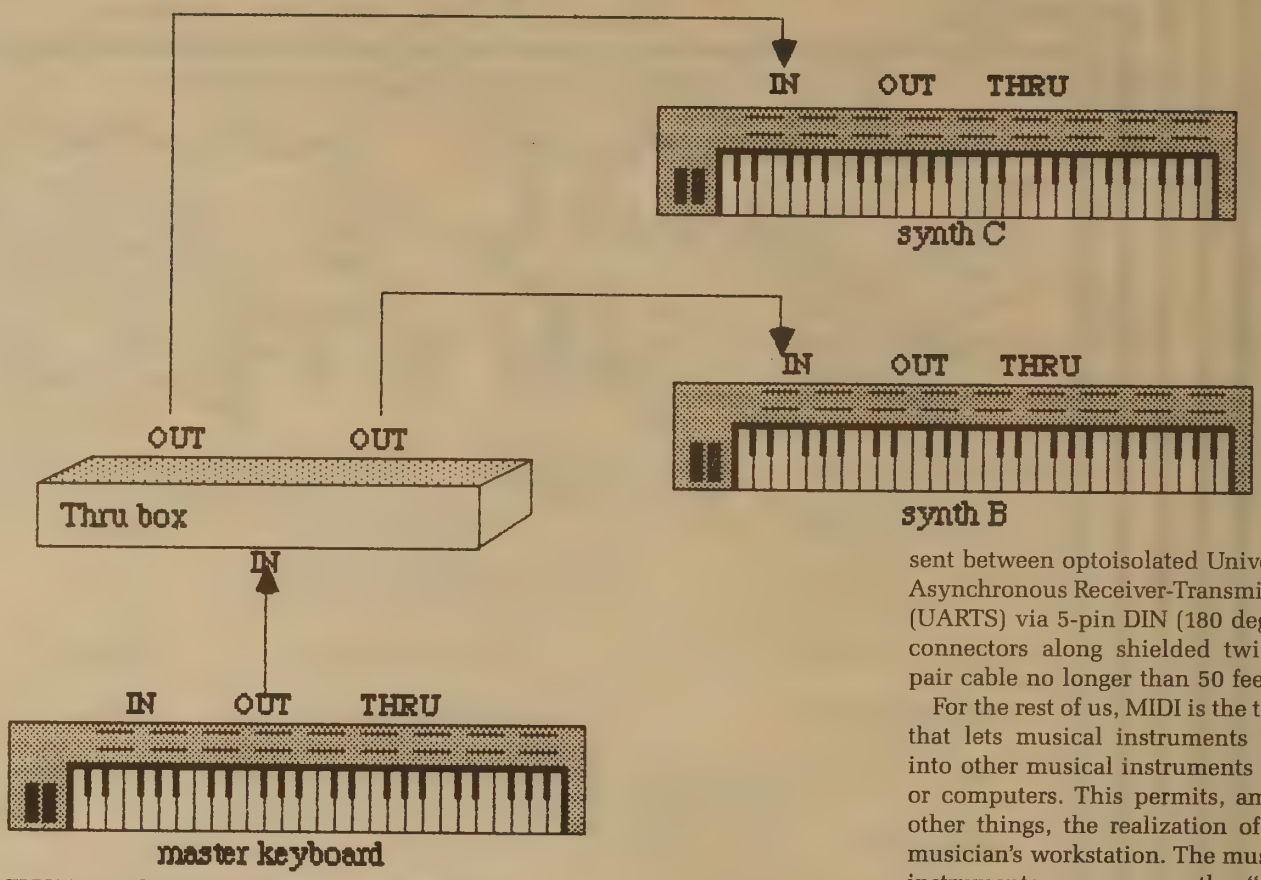

FIGURE 2: Thru box MIDI keyboard setup

MIDI data is a description of the performance, not an actual recording. In other words, what is transmitted is a series of commands or messages that can tell a synthesizer to do certain things at certain times.

MIDI

For those who don't like numbers, skip this paragraph. For those that do—the Musical Instrument Digital Interface operates at 31.25 (+/− 1%) Kbaud, asynchronous, with a start bit, 8 data bits (D0 to D7) and a stop bit, for a total of 10 bits in a period of 320 microseconds per serial byte, sent between optoisolated Universal Asynchronous Receiver-Transmitters (UARTS) via 5-pin DIN (180 degree) connectors along shielded twisted-pair cable no longer than 50 feet.

For the rest of us, MIDI is the thing that lets musical instruments plug into other musical instruments and/or computers. This permits, among other things, the realization of our musician's workstation. The musical instruments we use are the "electronic" kind, specifically those that are themselves controlled by microprocessors internally, like most any synthesizer or drum-machine on the market today. Once the MIDI connection is made, what gets communicated depends on the application. In the case of sequencing, easily the most popular of the applications possible, it is information about a musical performance, such as when a key on a synthesizer is being pressed (**Note On**), when that key is no longer being pressed (**Note Off**), how quickly the key was struck (**velocity**), if the sustain pedal was pressed (**Control change**), and so on. Such information is "time-stamped" as it is received by the computer, so that an accurate representation of the performance can be stored in computer memory. With the right software and right computer, the "playback" will be indistinguishable from the original.

Keep in mind that MIDI data is a description of the performance, not an actual recording. In other words, what is transmitted is a series of commands or **messages** that can tell a synth to do certain things at certain times, such as "play a note," or "release a note," or "move your pitch-bend lever halfway up." Because of this, many things are possible that are impossible with analog tape-recording (which this application is often too strictly modeled after). For instance, it is a simple thing to have our description sent to a synth at twice the speed received. Unlike the "munchkin" effect you would get if you, say, played a tape-recording at twice its normal speed, MIDI se-

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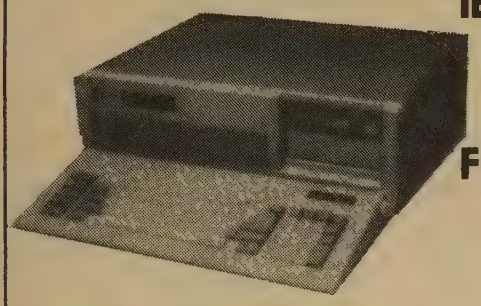

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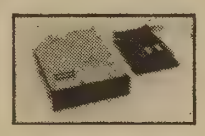

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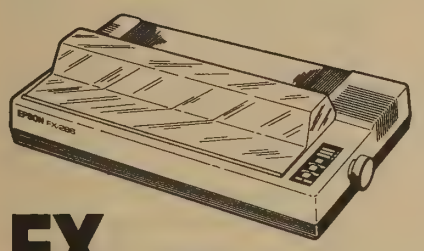

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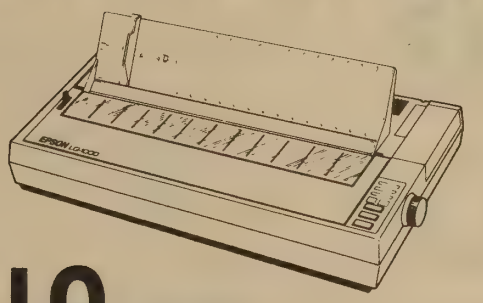

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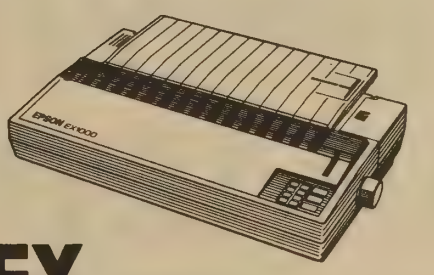

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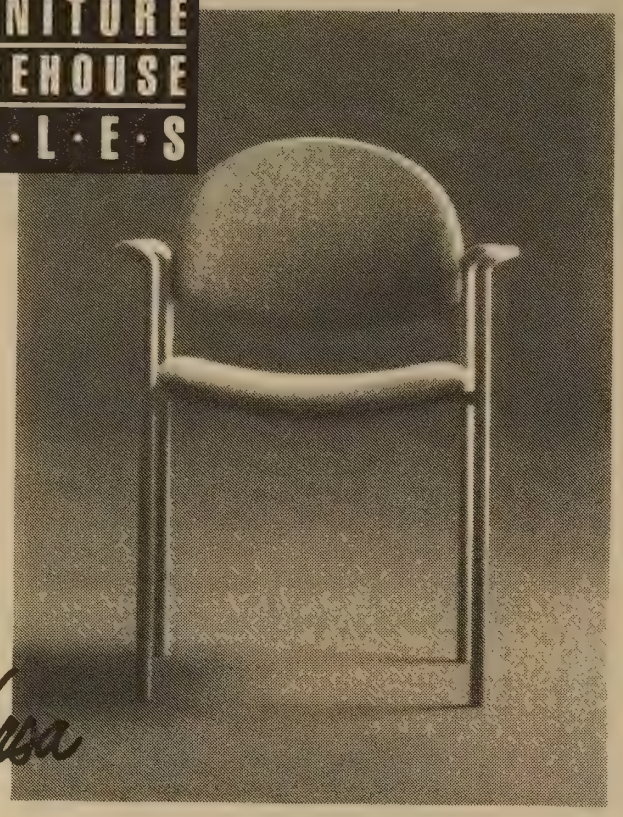

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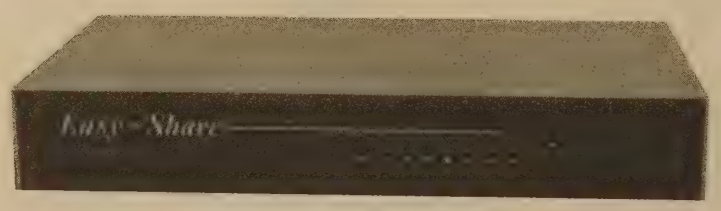

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quencing leaves the pitches the same, just plays them twice as fast. In fact, because our description is a numerical one of discrete values, virtually anything that can be done to a number can be done to our description. If we added the number 12 to every byte representing a note, we would hear a playback an octave higher, for in MIDI each increment in such a value represents a pitch one half-step higher. Also, because we are only sending a description of the performance, we can set the receiving device, our synth, to play a completely different sound than we used originally. This permits a musician to re-orchestrate a piece of music instantly, and often.

CHANNELS AND MODES

When the receiving MIDI device gets a sequence of MIDI commands, it will either carry them out, or ignore them, depending on two factors: the "channel" the sequence of commands is set on, and the "mode" the receiving device is in. The MIDI specification requires that the commands be sent over one of 16 MIDI channels, as a way of directing those commands to a particular destination. The synth "knows" if such "channelized" commands are meant for it by being in a particular mode. When a synth is in Mode 1 (commonly called "Omni Mode), it will respond to a sequence of commands no matter what MIDI channel they are being sent on. When a synth is in Mode 3 (commonly called "Poly" Mode), it will respond only if the channel the commands are sent on match the one channel (called the Basic Channel) the synth is set to. So what happened to Mode 2? Well, it's with Mode 4, and we're going to leave them until our next article, when we talk in detail about sequencing.

Whether the receiving device actually responds to the commands or not, the synth immediately sends a copy of the incoming sequence of data to its THRU connector. This allows a musician to "daisy-chain" his/her keyboard set-up by connecting the OUT of the sending device (which could be a computer or what is called the "Master Keyboard") to the IN of the next synth in line, which in turn has its THRU connected to the IN of the next synth, and so on (see figure 1). In this way all possible receiving devices get to look at the stream of commands being sent over MIDI. Since MIDI allows for sixteen channels, it is conceivable that such a chain could be made to sixteen different synths. But the data stream can become "distorted" if sent THRU more than a few synths. Other methods have been worked out to accommodate large set-ups, notably one where the OUT of the sending device is split up immediately into multiple OUTs through a device known as a "Splitter" or a "Thru-Box," then plugged directly to the IN of the receiving devices (see figure 2). Either way, the Channel/Mode combination allows a musician the kind of control we would expect in our workstation. By setting all the synths in a set-up to Omni Mode, a single key press on the Master Keyboard can trigger the sounds on all other keyboards at the same time, permitting a nice, "fat" sound. If, on the other hand, the musician wants each keyboard to play a completely different part, then s/he sets the various keyboards to different basic channels, and directs the sequencer to channelize the notes accordingly.

SYSTEM MESSAGES

In addition to Note On and Note Off type commands (known as **Channel Voice** messages) and Channel/Mode commands (known as **Channel Mode** messages), there are other types of data sent and received over MIDI. These are called **System** messages, of which there are three types. **Common** (actually the least common of these System messages), **Real-Time** (which, among other things, maintains a continuous 24 pulses per quarter note timing reference to keep all devices "in sync"), and **Exclusive** (data used by only one kind of synth for its own "exclusive" purposes). The typical use of an exclusive message is to transfer data pertaining to a synth's front panel (the settings that determine the kinds of sound produced), or to send a stream of numbers which represent the discrete values of a digitized sound (the kind of format a sampling keyboard uses). These are the kind of messages used by the editor/librarians of our workstation. The nice thing about exclusive messages is that they are proprietary and can be used by various manufacturers in almost any way they choose. This, along with other undefined "gray areas" in the MIDI spec, allows software and hardware developers technological elbowroom, and helps to keep MIDI a rather dynamic specification, being put to uses that few had originally envisioned.

NEXT STOP: THE SEQUENCER

To those of you still with me, congratulations. You now have a solid overview of what MIDI is, and maybe just as importantly, what it isn't. In our next article we will look at the software package that has become the industry standard for software-based sequencers, and why it couldn't have been written for any other computer than the Mac. □

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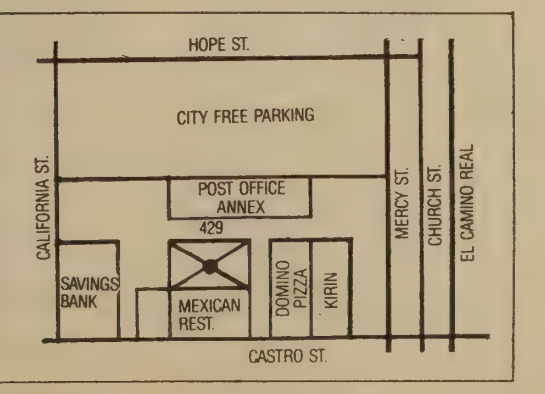

Personal Computers Revolutionize The Recording Studio

By Mary Eisenhart and Jacqui Ford

As the widespread acceptance of MIDI and personal computers drastically changes the tools and options available to musicians, it's also sent shock waves through the recording industry—not just in the way recordings are made, but in the way a studio conducts its business as well.

Jim Gardiner produces recordings at Berkeley's Live Oak Studio, which offers both Macintosh and IBM-based rooms. On the one hand, he says, "MIDI's almost run 24-track studios out of the business. Once, you'd get down conventionally and write the song out, and then you'd find a studio and book time to record the song, hire players—but now everybody does it at home. The kid that normally would've come in to record is now doing it at home."

On the other hand, the technology also offers unprecedented flexibility. "The IBM and the Mac can do more than a 24-track recorder," says Gardiner. "It's the equivalent of doing the exact same thing you'd do on a recorder, except with the ability to do anything you want—take music, go back, forwards, upside down—all the things you can't do with even a 24-track recorder."

Chris Irwin, a partner in Manhattan-based Calliope Recording and Productions, a multimedia production facility whose work spans videos, commercials, and music, agrees. "The use of computers has opened up an incredible number of doors for us in terms of realizing our ideas musically and getting them out as product." Calliope currently has two Macintosh-based recording rooms, each with its own sound library, with one Mac interfaced with a 24-track tape recorder and the other with direct digital recording.

Computer-based recording technology offers a number of advantages over its predecessors. Perhaps most importantly, from the musician's standpoint, it's substantially reduced both the cost and the monotony of studio time. A little digital manipulation is often an attractive alternative to endless laborious takes of the same passage or re-recording the entire piece if you've decided to change something; says Irwin, "You can move around a bridge section of a song to a chorus, you can speed your tempo up or down, you can transpose your instruments, and you can have synthetic instruments or actual samples of real instruments play these parts. In one small room, with what's probably considered a minimum of gear, you can create entire symphony orchestras and compositions, as well as contemporary music."

PHOTO: MARY EISENHART

Live Oak's Jim Gardiner: "The IBM and the Mac can take music, go back, forwards, upside down—all the things you can't do with even a 24-track recorder."

Also, MIDI provides the option of leaving tape entirely out of the recording process, which not only facilitates editing but often improves sound quality as well—eliminate the tape and you've also eliminated its hiss. "I try to do as much as possible without using tape," says Gardiner. "If I played you something that didn't use tape, if it was just the keyboards, then you'd probably hear a lot more of the dynamics, because it would be noiseless and absolutely clear." There are, he adds, some sounds that still can't be sampled and recorded digitally as well as by analog methods, notably the sound of the human voice; however, most of these limitations are probably short-lived.

While technology is reducing the time musicians need to spend in the studio—clients, for instance, can also create music files using their home equipment, send them via modem or disk to the studio, and have them loaded into the studio's computer for further work before the meter starts running—Gardiner's noticing a trend among his clients to spend as much time there as they ever did—polishing, fine-tuning, putting in extra finishing touches. Both he and Irwin feel strongly that in order to stay competitive, studios will need to offer artists tools they can't get at home—more high-end keyboards, more sophisticated recorders, unique sound samples, and most of all the producer's expertise. As the business community has discovered that the best desktop publishing software in the world won't miraculously transform the user into a professional designer, so too musicians are discovering that better tools aren't themselves a substitute for experience and knowledge of what works.

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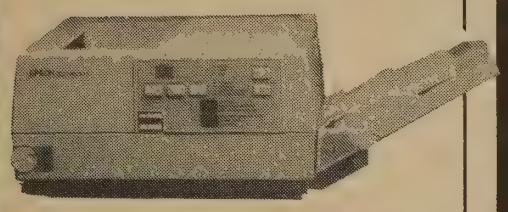

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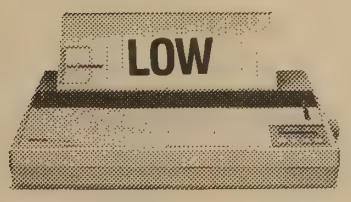

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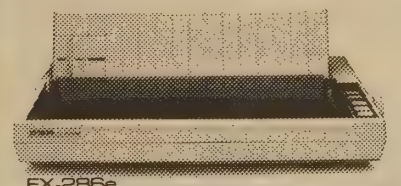

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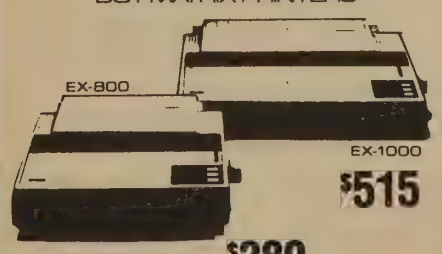

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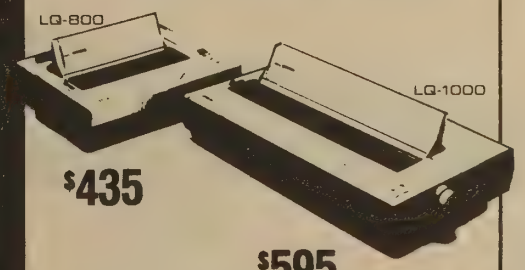

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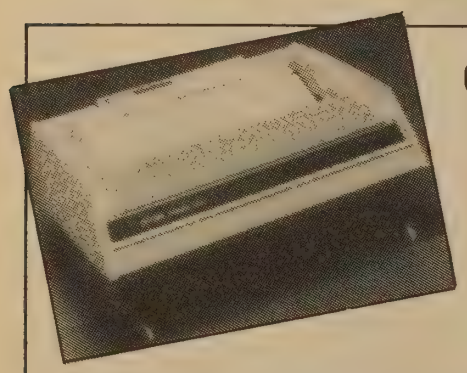

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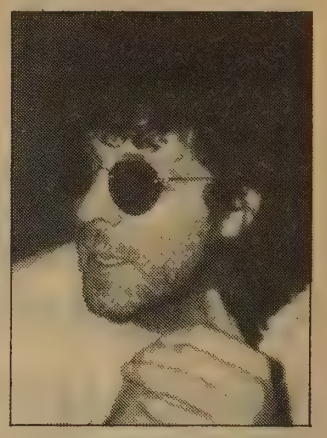
Calliope's Chris Irwin: "The use of computers has opened up an incredible number of doors for us in terms of realizing our ideas musically and getting them out as product."



As MIDI and computers change the way music is actually made, a process Gardiner sees as going back to the first cave person who decided to see what happened if he drilled a few more holes in a flute, there are, as always, winners and losers. With easier-to-use equipment and more forgiving tools, technical prowess has become far less essential to producing a professional-quality piece of music, resulting in less studio work for session musicians. On the other hand, it's opened up a whole world to people with more ideas than technique. Says Irwin, "It's a very powerful tool. It's broken down a big barrier in terms of getting your ideas across. Drum machines and sequencers specifically have made it possible for people who are not skilled as musicians to make incredible tapes. An untrained person can take something that's just a concept or idea and turn it into actual commercial music. It's very difficult to manipulate analog tape in the same way."

Gardiner worries a little that all this technology may have the effect of putting a price tag on creativity, developing an audience that demands the latest in high-tech refinements. "It used to be that you could get three or four kids to rehearse in a garage, and you didn't need any money to do it. But now the kid in the garage won't be able to get his song as perfected."

Still, technology can enhance creativity, but so far it hasn't come up with a substitute. "The kid's not going to be able to compete," continues Gardiner, "unless he's got great songs. *That's* the bottom line. *That's* what everybody's looking for." (Live Oak Productions, 415/540-0177; Calliope Productions, 265 W. 37th St., New York, NY 10018, 212/704-9626.) □

OH, AND IT RUNS THE BUSINESS, TOO...

Once it's in the studio, the personal computer pays some unexpected dividends.

For one thing, according to Gardiner, his Mac and IBM have proved a far better investment than most of his dedicated recording equipment. "Microprocessor-based equipment is getting cheaper—you can get things for a few hundred now that would have cost thousands a few years ago—cheaper and better. The IBM and the Mac are the only equipment I've bought so far that hasn't become outdated. You can always update it with more memory and more software."

And whether, like Live Oak, the studio uses commercial software packages, or, like Calliope, uses a custom all-in-one system, personal computers offer unprecedented convenience in automating its entire operation—the same machine keeps the client files and schedules, does the billing and correspondence, and stores and refines music. Says Irwin, "We've developed a system whereby we do our writing and elementary arrangements of the tracks in our programming room and wind up with all of the timing information, as well as much of the sonic information, on small floppy disks. They're kept in files, and we have data sheets that accompany them. We schedule out our time in the studio to the public and to our production company, and we print the material that we put on disks onto tape. Sometimes we don't print it onto tape at all—we run it live through our console onto either an analog or a digital recorder.

"What the personal computer has done for us is interface a number of important things that we use in our daily activities in this business—a library of sounds, a mechanism for recording in a way that's very accessible and easy in terms of the editing process. Our personal computer, in this case, has bascially doubled the output of our studio—it's a tape recorder and a library for sounds, built into one machine, depending on what software we use.

"We're in the process of finishing off the system that's based on a central brain that supplies all of the sound power, sequencing power, business files, everything. It's pretty exciting to think in terms of there being one central intelligence behind the business."

—*Mary Eisenhart and Jacqui Ford*

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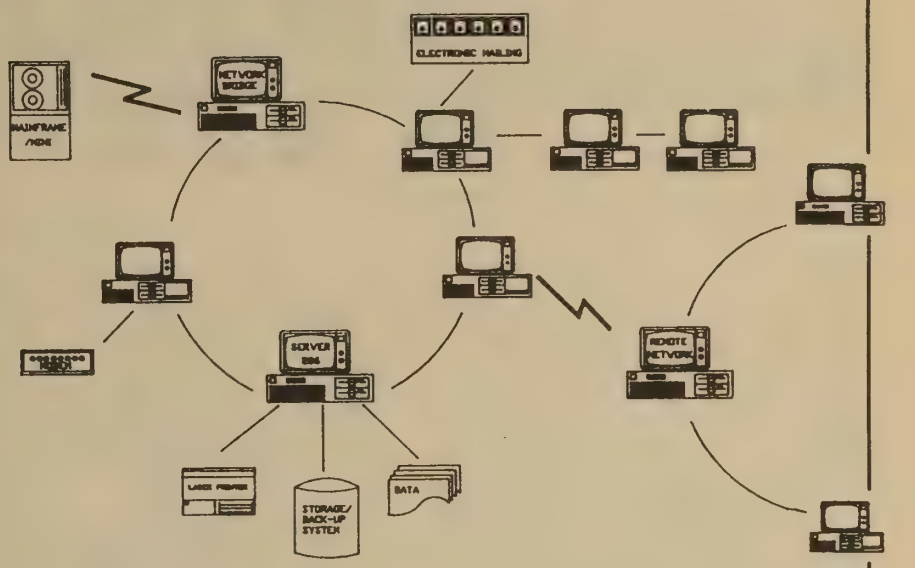

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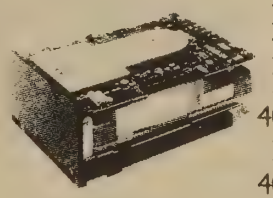

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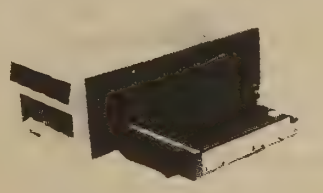

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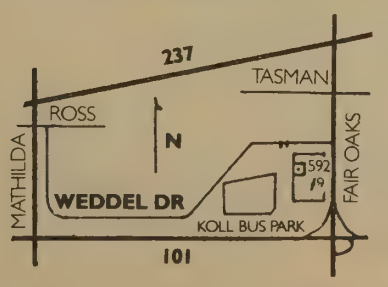

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Passport Designs And The Evolution Of MIDI For Micros

By Kristen R. Coston

PHOTO: MARY EISENHART

Dave Kusek of Passport Designs, a pioneer and leading developer in the MIDI field.

Music software has come of age. More accurately, it leaped from infancy straight into young adulthood, skipping the sharp pangs of adolescence.

Thanks to the development of MIDI (Musical Instrument Digital Interface) hardware for microcomputers, music software is no longer just a toy, but a powerful tool that measures up to professional expectations—a sound investment that can save musicians lots of time and money. Even non-instrumentalists can use computers to manipulate and "play" their ideas for them. And anyone who's gone shopping for MIDI hardware or music software has probably encountered Passport Designs.

One of the world's leading music software publishers, Half Moon Bay-based Passport Designs pioneered the microcomputer MIDI market in early 1983. With the MIDI interface, you can hook up any MIDI-equipped musical instrument to your micro, and then use music sequencing, scoring, voicing and printing software to turn your setup into a complete MIDI studio.

Passport was founded in 1980, before MIDI was born, by Dave Kusek and John Borowicz. (Both were previously with Star Instruments, the drum synthesizer company that created *Synare*.) In 1981 Passport's first product, *Soundchaser*, came to market. This early music system, designed for the Apple II, consisted of both hardware and software. "We had to design everything," says Kusek, president of Passport. The hardware included a musical keyboard, an interface for the keyboard, and a synthesizer card that plugged into the computer. The software let you compose and manipulate chord voicings and melody lines, and included an educational ear-training program and a musician-level music printing program called *Polywriter*. You played back your compositions directly from the computer.

Soundchaser's playback capabilities were confined to the dubious sound quality then achievable on the Apple II, so its market success was limited to the computer and educational communities. "It just didn't have that sound quality that professional musicians were used to," notes Kusek. But though it fell flat in the music community, *Soundchaser* was valuable there because it was "a very specific way of connecting one type of instrument to one type of computer. And some of the work that we did certainly opened some people's eyes that you could connect an instrument to a computer and do things."

MIDI was not conceived by Passport; it was created in answer to the cries of professional musicians for a way to connect two synthesizers and play them both from one keyboard. The idea of an interface to achieve this end was formally articulated in 1982 by Dave Smith and Chet Wood of Sequential Circuits in a paper presented to the Audio Engineering Society. It was then a short step to getting major synthesizer firms, such as Yamaha, Roland and Korg, to cooperate by giving their stamps of approval and developing applications. By 1983, MIDI was a market reality.

With MIDI, you don't need to know how to program, and you don't need to be an expert sound-mixer or a great performer. All you need are ideas and a desire to make music.

Passport was the first software company to enter the MIDI revolution, with a MIDI device for connecting musical instruments to microcomputers. Working with synthesizer firms in Japan and the US, Passport designed what is now the industry-standard MIDI for micros. The firm's first MIDI products were created to support Yamaha's DX-7 synthesizer, and Yamaha, in turn, opened up a wide distribution network for Passport products. These products included Soundchaser-like software with greatly enhanced polyphonic capabilities.

MIDI micro ports can't be beat for their speed and efficiency. They free musicians to concentrate on making music rather than on tedious audio setup or manual composition methods. Kusek points out, "MIDI really makes it easy. Now you can buy all this off-the-shelf stuff and connect it together, without any technical acumen—the more the better, but you really don't need a lot." You don't need to know how to program, and you don't need to be an expert sound-mixer or a great performer. All you need are ideas and a desire to make music.

MIDI brought about an explosive growth rate in the electronic keyboard market—a rate that's fluctuated between 30 and 80 percent for the past five years. For Passport, MIDI was the key to success; according to Kusek, "MIDI created a market that was about 50 times as big as the market for *Soundchaser*—overnight" because that market now extended to musicians as well as to computer hobbyists and education.

All of Passport's projects have been self-funded, and the firm does all its own marketing. Kusek advises that although MIDI for micros is still a niche market, "There's a lot of money

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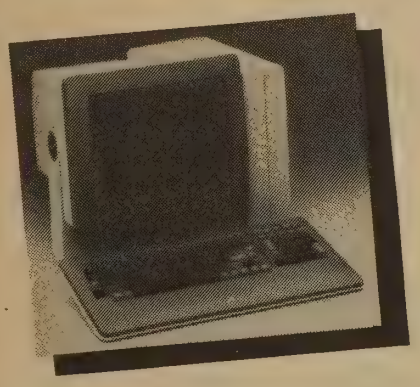

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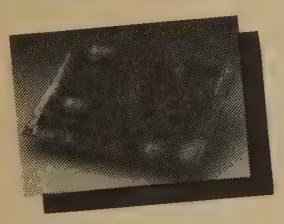

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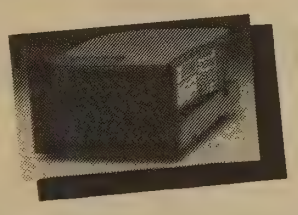

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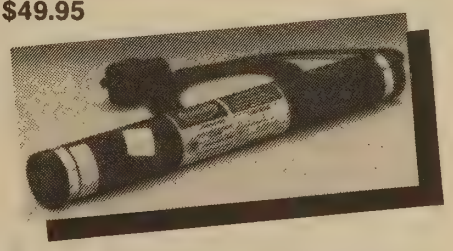

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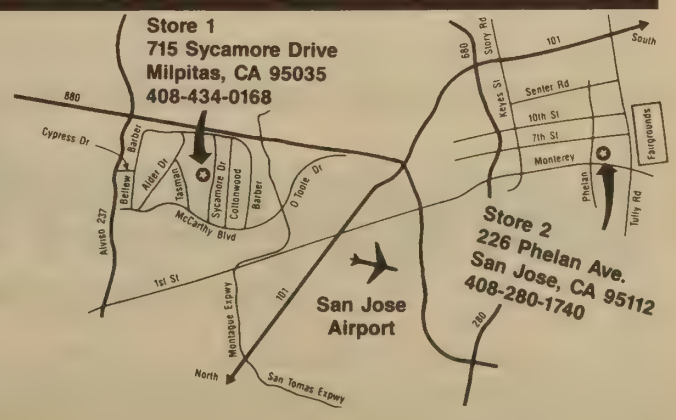

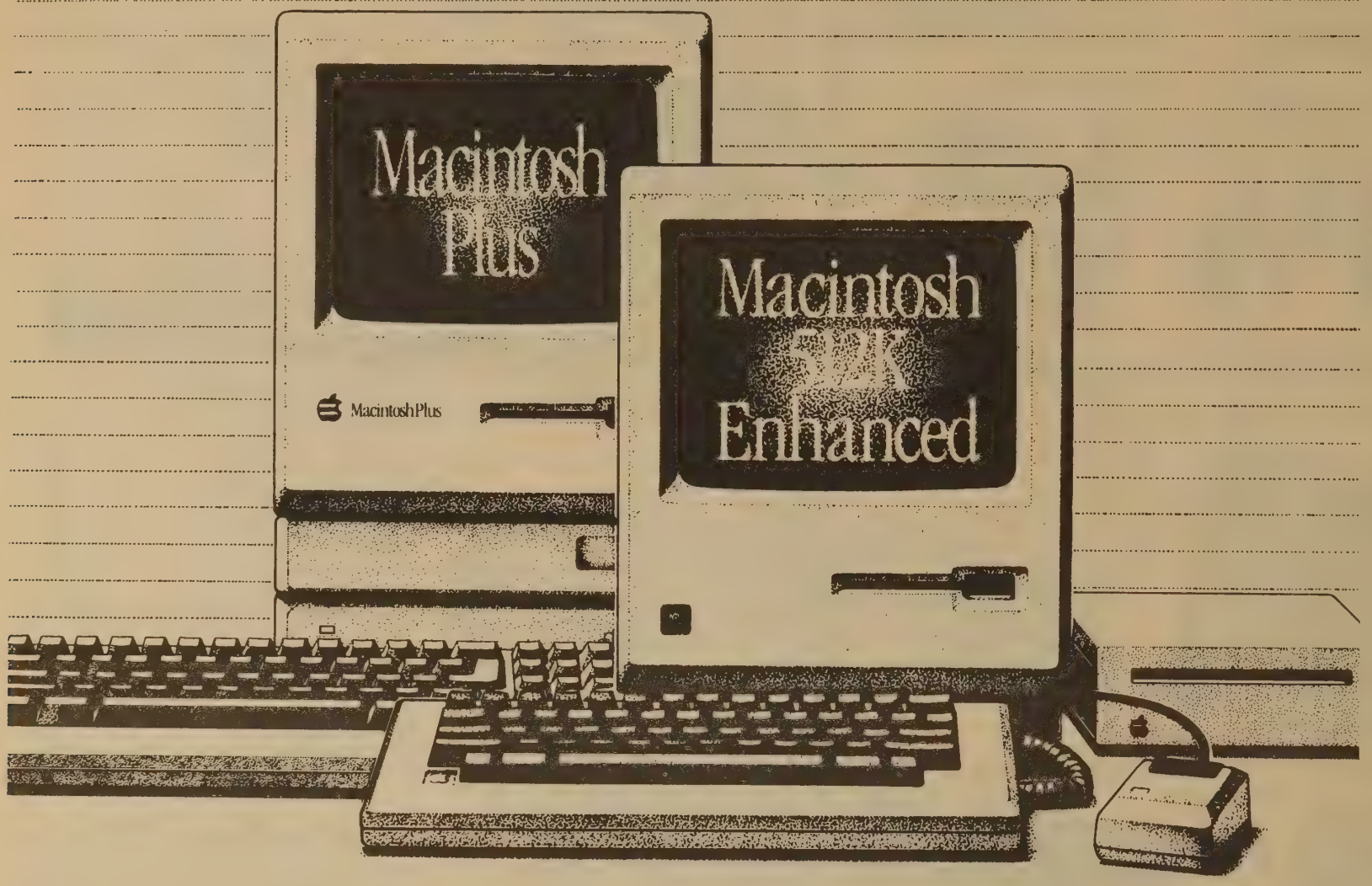

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to be made in music software . . . it's a new vertical market that really is untapped, and if there's anybody out there looking for a vertical market to go after that's not business-related and is a lot of fun, music is a really good market." Many dealers are finding that music software is a valuable sales tool for MIDI hardware, and vice versa.

Predicting the next quantum leap for computers and music, Kusek explains that while MIDI is an electrical and physical standard, there is still no corresponding standard for a file format to describe a MIDI song. "What we're trying to do is to boil it down to one standard file format called a MIDI file, which would be a machine-readable form of MIDI. . . . a sequencer could write that file, and you can take that disk and load it into your music printing program and read the file and display it as notation, and edit it a little bit." The file could be rewritten, and then loaded into your performing program and read by it, and "all of a sudden now you've got a performance that is the result of several pieces of software kind of massaging that data." Kusek adds, "That's a major leap in the evolution of music software that's about to occur—this summer." □

Passport Music Software

Passport offers a full line of sequencers, printing systems, voicing systems and educational products, all of which interface with most microcomputers through Passport's industry-standard MIDI.

Master Tracks Pro, Passport's impressive sequencing software for the Macintosh, lets you record and graphically edit 64 tracks of real-time or "step-time" (note-by-note) input. Meter, beat and tempo data are stored in a separate, "conductor" track. The package includes a system-exclusive "librarian" program that gives you complete control over your entire MIDI setup, and a keyboard control mapper, which lets you control the sequencer from a musical keyboard by assigning capabilities like play, record, fast-forward and rewind to keys of your choice. The Mac environment, with its windows and pull-down menus, lends itself to a sequencing program such as Master Tracks Pro because all data can be edited in graphical form.

Watch for the release of an integrated composing and printing program that prints *Master Tracks Pro* files in standard music notation, and for a file transfer utility that converts files to and from other MIDI file formats. Also on the way: *Master Tracks Pro* for the Atari ST.

For the IBM-PC and compatibles, there's *Master Tracks PC*, a phase-oriented 64-track MIDI sequencer and step editor for the professional composer and performer. The program gives you a free-form approach to composing music, which means you can shape and mold your ideas at your own pace, constructing and rearranging phrases of any length.

Master Tracks is also configured for Apple and Commodore computers, offering all the benefits of *Master Tracks PC* (except windowing) with 16-channel unlimited track recording. It lets you orchestrate your songs as well. Master Tracks Pro for Apples and Commodores includes a live solo/mute feature on each track and expanded memory up to 325,000 notes.

MIDISOFT Studio is a low-cost, full-featured 32-track sequencer for the ST. This "recording studio" lets you make demos, compose songs, or just jam. Laying down multi-track sequences is easy because all the info you need is right on the screen, telling you what tracks are playing and what instruments you're using. "Transport" controls (fast-forward, rewind and pause) let you move quickly through the piece to record or play from any point. *MIDISOFT Studio* includes capabilities for real-time recording of events or "step-recording" of individual tracks.

Other Passport MIDI software includes the popular *Polywriter* music printing program, for the Apple; *The Music Shop for MIDI*, integrated sequencing and printing software for the Commodore; *MIDI Song Albums*, an entertainment series for Apples and Commodores; *Passport MIDI Voice Editors* for Yamaha's FB-01 synthesizer on PCs, Apples and Commodores; *Passport MIDI Voice Librarians* for Macs, PCs, Apples and Commodores; *Music Tutor* educational software for the Apple IIe; and *MIDI/8 Plus* and *MIDI/4 Plus* sequencing software for Apples and Commodores.

Most recently, Passport has hit the desktop publishing market with *Score*, for the PC. Slated for release in June, this sophisticated program lets you input, edit and print at engraver quality any piece of music you conceive — in a completely user-definable format. *Score* is compatible with most printers, and will print at a resolution of up to 4,000 dpi.

For more information, contact Passport Designs, 625 Miramontes St., Half Moon Bay, CA 94019, 415/726-0280. —*Kristen Coston*

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Music On The Amiga

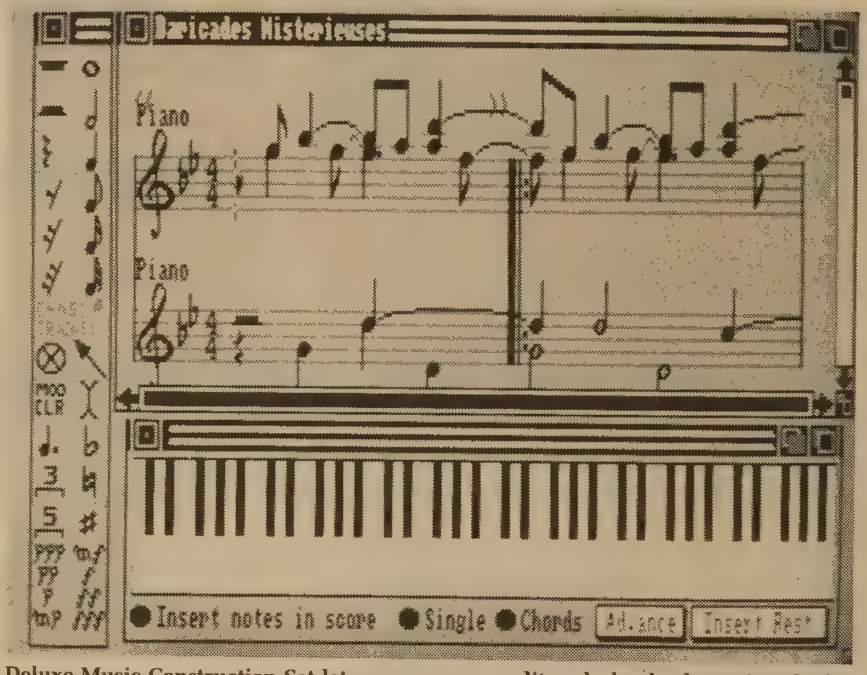
By Ben and Jean Means

The lights are dim...the crowd hushed. A computerized logo drifts across the giant video screen as a chorus of synthesizers begins to play. The lights come up as the logo dissolves into geometric multi-colored shapes, swirling about in the ebbing dark. As the singer steps up to the mike, his image appears magnified on the screen. The shapes cluster about him in the shadows, then explode into showers of color. A dream landscape appears, and as he sings and dances, it slowly shifts colors. He finishes singing and suddenly his giant image on the screen freezes...then bursts into sparkling points of light. The lights fade to black as the audience erupts with thunderous applause, and a lone computer waits for its next task.

This entire show could be run by one Commodore Amiga 1000 computer, using currently available software and hardware. The lights, synthesizers, sound effects, mixing and animated video effects combined with live action could all be controlled from a single Amiga running everything at the same time. This is the miracle of multi-tasking, the ability of one computer to run multiple programs simultaneously.

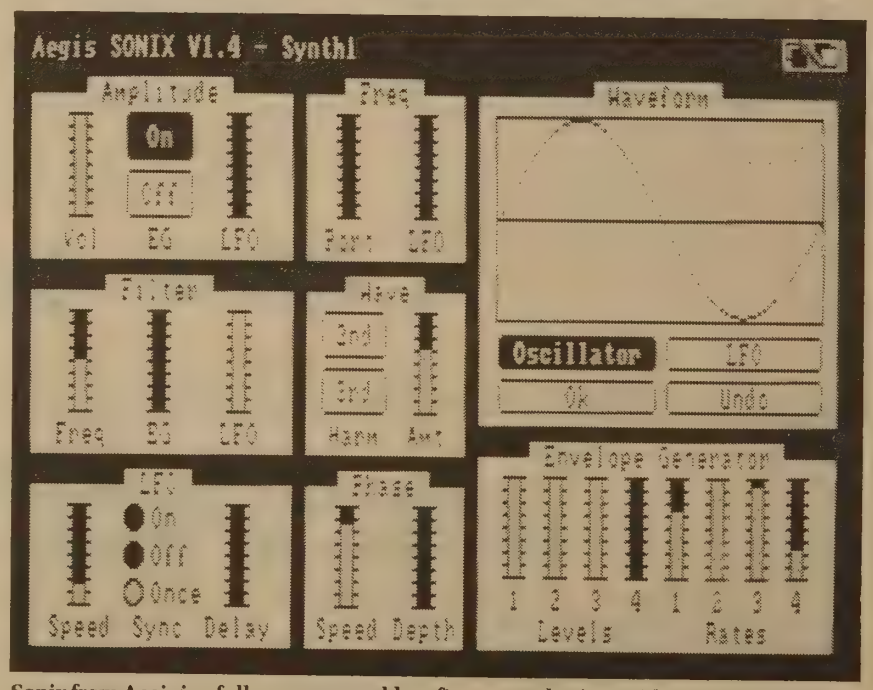
The Amiga is an amazing computer for both music and video. It offers 4,096 colors, four eight-bit internal voices with stereo output, a speech processor, up to nine megabytes of memory expansion, and three Very Large Scale Integration Chips (VLSI) which let the Amiga fly swiftly through the nanoseconds. The Amiga's unique Genlock option ($295) allows you to mix color computer graphics with live action. And among PCs, only the Amiga has the multi-tasking capability to make the home music and video studio no longer a dream, but a concrete reality.

The new Amiga 500 has the same features as the 1000, and it's only $649. The new Amiga 2000 ($1499) has seven internal expansion slots for plugging in IBM AT cards and a special CPU slot for MC68020 or MC68881 cards.



Deluxe Music Construction Set lets you compose, edit and play back music, which can then be printed as sheet music, transferred through a sequencer, or played on MIDI instruments.

Among personal computers, only the Amiga has the multi-tasking capability to make the home music and video studio a reality.



Sonix from Aegis is a fully programmable software synthesizer with a simple notation editor for scoring.

LET THE MUSIC BEGIN

The Amiga wasn't a viable music computer in the past due to a scarcity of music software, but that is no longer true. The Amiga now has exciting, worthwhile products for both the amateur and professional musician. Here are a few examples.

SOUNDSCAPE, by Todor Fay of Mimetics: *SoundScape* is a professional quality MIDI sequencing program, but it's more than just another big music program. It's a huge program, and it threatens to get ever larger, because it's really not a program at all. Think of it as a UNIX for music, a complete music operating system. *SoundScape* creates a multitasking environment where little musical programs called modules are hooked together to build your own custom MIDI music studio.

SoundScape's open architecture is amazingly flexible and infinitely expandable. Even amateur C programmers can develop modules for their own special musical needs with Mimetics' Developers Kit ($149).

SoundScape currently consists of a sequencer (called Pro MIDI Studio 1.4, $149), a Sound Sampler ($99), and a MIDI Interface ($49).

The Pro MIDI Studio breaks the 8-, 16- or 24-track limit; it can record on an *unlimited* number of tracks which can be looped, quantized, edited and copied. There are also four special effects track modes; unlike most sequencers, Pro MIDI Studio lets tracks stop or start at any time, which allows layering of any number of simple or complex time signatures.

Modules are installed as easily as booting a disk into the Studio's Patch Panel. The first *SoundScape* utility disk of modules ($49.95) includes power modules like Mouse Bender, which gives mouse control over pitch bend, vibrato and other MIDI functions. The Mapper/Splitter translates any MIDI input into any MIDI output on any channel; this replaces hardware mapping devices costing hundreds of dollars and supports unlimited maps and splits.

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Blackship smiled. "Nice printing job, too."

"That HP LaserJet Series II Printer is magic," sighed the other woman. "Our publisher just called to say they've ordered a first run of 100,000 copies. Blackship," she smiled, "we owe it all to you."

"Tell me," he asked. "Just what is the subject of this soon-to-be best seller?"

"The definitive history of apple pies, and the role they've played in the development of Western Civilization."

"Good," nodded Blackship. "A subject we can finally sink our teeth into."

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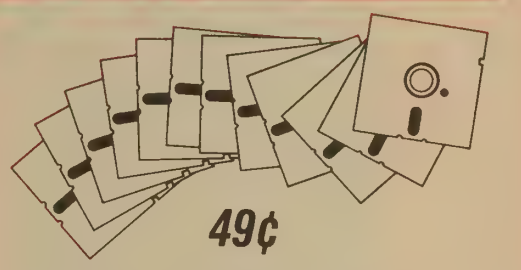

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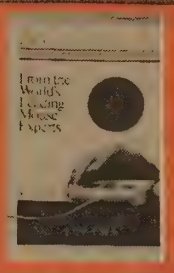

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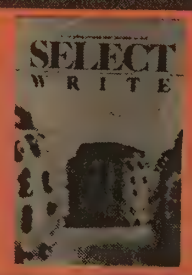

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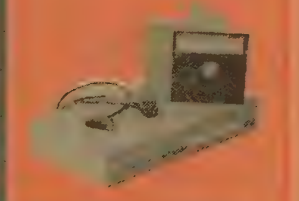

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This package contains The Spreadsheet Auditor, Cell Noter, and Micro Analyzer — debugging, documentation, and diagnostic tools essential for developing sound spreadsheets. The Spreadsheet Auditor looks for over 20 potential error conditions including overlapping, unsaved, and reversed ranges and ranges outside the active worksheet. This program also shows different views of your worksheet with a single key stroke. The Cell Noter lets you attach pop-up notes to any cell. The Macro Analyzer analyzes each macro, displays macro details on-screen and prints a macro report.

SummaSketch

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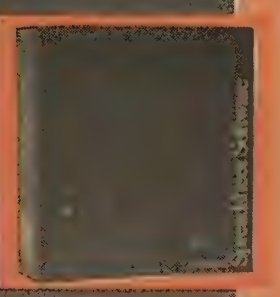

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If you run a small business, shopping for software can be a real struggle. Your business is a special size. It requires a custom fit. The Shoe Accountant make exceptional software available to small business, inexpensive and easily operated. It performs the accounting functions essential to small business success. It keeps credits and debits in balance. Track the receipt of receivables and the payment of payables. It even calculates labor hours and issues employees' checks. Some folks still think the best accounting system is a shoebox. They're right. The Shoebox Accountant is a perfect fit.

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Many more modules are being developed.

The Sound Sampler turns the Amiga into a four-voice, eight-bit companding sampler. You can sample one sound into each of MIDI's ten octaves. Since there are 16 MIDI channels, you can have up to 160 samples on board at one time. Your samples can be extensively edited in the oscillograph wave form display, and the sampled playback can be modified with a DX-7-style envelope generator. In other words, you can easily build your own sound library in which the sounds of banging kitchen utensils and pulling your cat's tail can become beautiful (or at least esoteric) instruments. Samples can be stored either in IFF or Mimetics formats, or you can buy disks of samples from Wavetable and E.C.T. Sampleware.

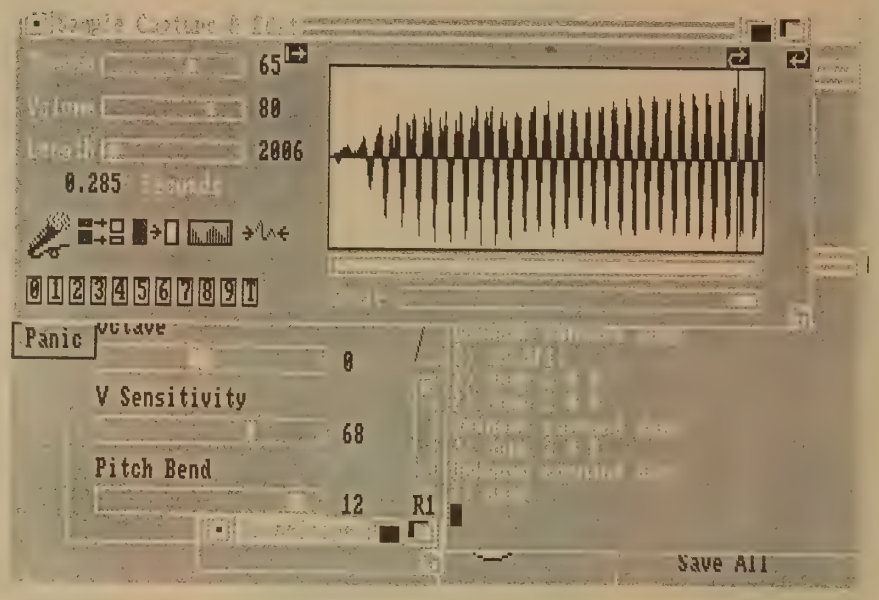
SoundScape will never stop growing: when other music programs have reached their peak, *SoundScape* will outdistance them by sheer size and unlimited flexibility.

DELUXE MUSIC CONSTRUCTION SET by Geoff Brown of Electronic Arts: *Deluxe Music Construction Set* (DMCS, $99.95) is a full-blown professional notation editor; you can compose, edit and play back music written on up to eight staffs. Your finished score can then be printed out as sheet music or transferred to a MIDI sequencer for overdubbing. *DMCS* accepts songs from *SoundScape*, *Instant Magic*, *Sonix* and other Amiga programs that use standard SMUS files, then prints them out with lyrics. You can play your *DMCS* scores with the Amiga's internal voices and also with MIDI instruments using up to 16 channels. *DMCS* can also be installed in *SoundScape* as a module.

TEXTURE by Roger Powell of Magnetic Music: *Texture* is a down and dirty sequencer. It isn't fancy and it isn't cheap, but it *is* one hell of a songwriting tool. It doesn't use Amiga voices, it doesn't use the mouse, but it turns the ideas in your head into complete songs faster than any other sequencer we've used.

The basic idea behind *Texture* is that notes are recorded into patterns and patterns are assembled into songs. While a pattern is looping, you can record on any of its 24 tracks, and you can copy, block move, transpose, quantize, filter and set changes in tempo, dynamics and articulation *without ever stopping*!

Best of all is the record buffer, which solves the problem of the perfect take forever lost. You can improvise over a looping pattern with all your wildest ideas until your creativity starts to ebb. Then, invoke the record buffer which has stored all those brilliant takes; you can audition each take and save the best ones to their own tracks. Another prime feature of *Texture* is the Undo function, which lets you proceed fearlessly through your wildest imagining, and safely returns your original data if your imagination goes awry.



The Sound Sampler in SoundScape turns the Amiga into a four-voice, eight-bit companding sampler.

Texture ($295) uses the Roland MPU-401 Interface ($295) and the MIF-AMG adaptor ($125). The MPU-401 provides a metronome and FSK tape sync, which allows you to record multiple overdubs to a multitrack tape deck in perfect sync. It's expensive, but it's worth it.

SONIX by Mark Riley of Aegis Development: *Sonix* ($79.95) is a fully programmable software synthesizer with a simple notation editor for scoring. Many other software synths use additive synthesis, which is a sophisticated way of stacking harmonics. But it usually doesn't work well on home computers, and ends up sounding thin and reedy. In contrast, *Sonix* uses subtractive synthesis, which fools the Amiga's digital sound chip into thinking analog, so *Sonix* sounds very warm and pleasing.

Sonix is easy to learn, but it's more than just a toy. It's an educational tool with a 244-page manual, which provides a home study course in music theory and analog synthesis. You can teach yourself patch programming by fiddling with the oscillator, filter, amplifier, harmonic generator, envelope generator, phase shifter and low frequency oscillator. The variety of sounds you can create is endless, from synth whales and sitars to Chinese gongs.

Sonix can use these great sounds you've created to play back scores written in the notation editor with the Amiga's four voices, as well as output four additional parts over MIDI. So the Amiga can conduct an eight-part symphony with just a click of your mouse.

INSTANT MUSIC by Bob Campbell of Electronic Arts: *Instant Music* ($49.95) is for everybody. It's a techni-colored musical dream where there are no wrong notes. Boot up *Instant*; the music begins to play. Start moving your mouse up and down...you've just learned how to mousejam. The worries and cares of the day just disappear as you sit watching the mouse paint out your parts in glowing red, green, yellow and blue notes.

Instant Music has 63 different songs from Avant Rock to Beau Bop to Boogie Woogie. And all are designed to chase away the blues as you change 'em, rearrange 'em and save 'em as a soundtrack for *Deluxe Video*. And when you're ready for new mouse adventures, you can port over a whole music history of songs from "It's Only Rock and Roll."

"It's Only Rock and Roll" ($29.95) traces the roots of rock and roll in 40 songs that span a time period from 1956: Early Rock to New York 1977: New Wave; all these songs can be played with digitized instruments from fiddle to fuzz guitar.

MUSIC MOUSE by Laurie Spiegel for Opcode Systems: *Music Mouse* ($79.95) is an intelligent form of mouse jamming. You don't need music theory or keyboard skills, and you can't store what you play. But you can generate sophisticated four-part harmonies with the internal Amiga voices or with information sent out over MIDI.

The mouse creates music on a grid of four instruments that are played across vertical and horizontal keyboards. You can select different scales from pentatonic and diatonic to Middle Eastern from the QWERTY keyboard, as well different tempo and fill patterns. Then just let your mouse jam intuitively; it is guaranteed to sound original. If you like avant rock a la Philip Glass, you're going to love Music Mouse.

CONCLUSIONS

But that's only half the story. While the Amiga is playing your song, it can simultaneously run full color animations Genlocked with live action. So sitting at home alone in your bedroom with only the soft light of your color RGB monitor, you are the director of your next MTV video. We'll look at Amiga video products in a future article. □

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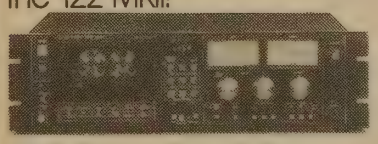

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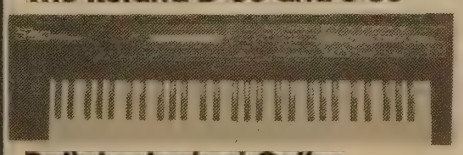

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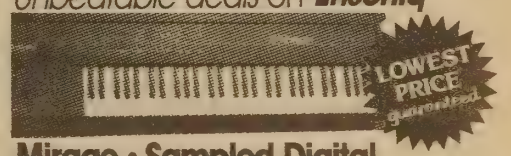

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The n.f. Factor: Online Terrorism Among The BIXen

By Brock N. Meeks

"The n.f. Factor." It sounds like the title of a paperback thriller, and it has all the ingredients of a Ken Follett novel —intrigue, cunning, treachery, the fate of a community in the balance.

For some 18 months, a person known only by the alias "n.f." brazenly breached the security of BIX (BYTE Information Exchange), *BYTE* magazine's computer conferencing system. n.f. carried out a self-imposed mission of electronic terrorism that included vile outbreaks of racial bigotry and death threats.

To counter the n.f. factor, a nationwide task force involving two police agencies, the Secret Service, the FBI, and members of the defense intelligence community marshalled its combined power in an electronic manhunt, the like of which was never before seen in the online community.

Intelligence professionals solve this kind of mystery by convening something called "the murder board." A group of second-guessers, the board reexamines the facts while retracing actions in light of subsequent events. The process, which can reveal anything from a double agent to misguided motivation, is called "walking back the cat."

Let's apply a similar tactic to the ensuing story of the n.f. factor, a blatant attempt to embarrass the technical reputation of *BYTE* magazine, and reduce its flagship, BIX, to schizophrenia, chasing electronic ghosts.

THE BEGINNING

The story begins, oddly enough, with an open door: the BIX sign-up process. This entails nothing more than dialing up your local Tymnet node, entering "bix" and your name. You then provide a credit card number, for billing purposes, and, finally, choose your own password.

After giving BIX a valid credit card number (the system cross-references the number you enter with a database of all issued numbers) you are given full privileges on the system. And therein lies the seduction: there is virtually no "front door" security to BIX. Because the system allows *anyone* full access after the entry of *any* valid number, the potential for credit card abuse is absurdly high.

According to sources close to the investigation, n.f. would scan the books of stolen credit card numbers issued by MasterCard and Visa for a "starting number." Using that number, it was a simple procedure to change the last few digits until a "hit" (a valid number) was found, which BIX then verified in its database. (Apparently BIX would politely allow endless credit card "hacks" until such a hit proved successful.) The result was chilling: it was as if an intruder, intending harm, walked up to your front door and—finding it open—strolled inside, as if invited. Time and again n.f. found such an "open door"; once he was inside, all hell would break loose.

CATCH ME IF YOU CAN

Imagine coming home from a quiet evening only to find "long live the KKK—death to all blacks you n***er f**kers" spray painted on your sidewalk, front door, and on every wall of your house, and signed "n***erf**ker"—"n.f." for short. [*Asterisks inserted by MicroTimes—eds.*] You would be horrified, possibly in shock. Revolted by the disgusting bigotry, you'd feel that your privacy, your personal space, had been forcibly violated.

To a denizen of the online community, it's a very precise analogy. A place you thought was safe and secure turns out to be nothing of the kind, and this is exactly what was happening to BIX users.

Messages from n.f., like the one (regrettably) printed above, would, without warning, be peppered throughout the hundreds of conference topics on BIX, and they weren't always that tame. Along with such messages, n.f. continually taunted BIX and dared officials to stop the sporadic attacks.

Besides open messages, n.f. also began to send life-threatening messages, via e-mail, to a select group of individuals, usually female. Then, for a still unexplained reason, n.f. spat out a round of public messages that included threats on the President's life.

Enter the Secret Service; enter the nationwide task force.

CIRCLE THE WAGONS

To its credit, BIX kept the entire story secret, a feat that would have been impossible without the tireless efforts of BIX moderators.

These moderators are given charge over the hundreds of conferences and topic discussions on BIX. They provide a center point between BIX administration and the end user. In return they get free time on BIX and a (small) cut of the action. They were also "drafted" into an electronic "counter terrorist" force that sprang into action each time n.f. was discovered to be online. Moderators would electronically "sweep" their conferences and delete any n.f.-generated messages, hoping to spare the paying customers shock and embarrassment.

The whole "counterattack" plan was formulated in a "moderators only" conference. Thus, moderators could discuss strategies for countering n.f. attacks in private, away from prying eyes.

Only a few BIXen (as BIX users are affectionately called) ever caught on to what was happening. When a BIXen would openly complain about the "garbage" on the system, moderators would quietly, and privately, offer apologies in behalf of BIX. The plan worked like a charm.

But as n.f.'s attack became more frequent and more violent, the moderators began to pressure BIX officials for better security. Paranoia among the moderators broke out when it was discovered that n.f. began logging under a series of aliases. Suddenly, every unfamiliar BIX name became suspect. (As soon as a bogus n.f.-type account was discovered, BIX officials were alerted and the account would be deleted, forcing n.f. to reestablish a new account each time.)

In a special topic called "people problems," the paranoia and mutual suspicion created a climate in which moderators frequently pointed to a "suspicious" user's resume demanding that the user be "checked out" as a possible n.f. suspect. (The resume file on BIX allows users to store personal information such as full name, address, and interests). Moderator accusations were often prompted by nothing more than off beat system names. Infighting among moderators broke out, and some likened it to electronic McCarthyism.

As n.f.'s aliases proliferated, speculation arose that a series of "copycats" had infiltrated the system. Others disagreed and insisted n.f. was an "insider," possibly even a moderator, and that any discussion of countermeasures should be carried on in private. The "insider theory" met with disbelief and was laughed off as ludicrous.

BIX officials, however, knew otherwise, but chose to remain silent.

SETTING THE TRAP

The paranoia and disgruntlement among the moderators grew to almost fever pitch; they were being used as pawns in n.f.'s cleverly designed power play.

As the n.f. episodes continued, BIX officials secretly called on the expertise of FBI "profilers" in Quantico, Virginia. These profilers are experts at discerning the psychological and physical makeup of criminals simply by examining the facts surrounding a case. One source involved in the investigation called these profilers "almost clairvoyant."

According to one unnamed source, these profilers, as early as October of last year, supplied BIX officials enough information to prove that n.f. and subsequent "copycat" messages were the work of one man, and that he was, in fact, a moderator or BIX staffer. BIX didn't believe it, yet they couldn't ignore it.

The national task force, working in part on the information provided by the FBI, eventually tracked n.f. to Southern California. BIX did this

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by placing a "flag" on Tymnet that allowed them to track incoming n.f. type messages. The flag was set off whenever the password "XYZZY" was used to log into BIX.

Actually, the password became a "key player" in the investigation. For those not attuned to the significance of XYZZY, it's the "magic word" needed to enter the cave in the landmark game *Adventure*. One of the security agents working on the n.f. case told me, "XYZZY is one of the all-time hot passwords used by programmers." n.f., as it turns out, happens to be a well-known programmer.

By tracking the use of the password XYZZY, the Secret Service was able to gather enough evidence to obtain a court order for a tap on n.f.'s home phone. All they had to do now was sit back and wait, giving n.f. enough rope to hang himself. And hang himself he did. The tap was in place in January of this year, a full five months before any arrest was made.

Because n.f. was particularly set off by the reactions of female moderators, they were encouraged to "overreact." (Remember, n.f., as a moderator, could read all comments entered in the private "moderators only" conference.) Attacks from n.f. predictably increased as the "panic" level of the female moderators became more pronounced.

This baiting tactic was carried to an extreme when Pat Kelly, a member of the McGraw-Hill security team assigned to the case, signed as "Patricia Kelly" from "Soul Magazine" (thus giving the appearance of being both female and black) in hopes of drawing fire from n.f.

The plan went awry when a keen-eyed moderator pulled up the resume file for Patricia Kelly and noticed that the Detroit address listed for Soul Magazine didn't match the area code listed for the phone number. The next day, Patricia Kelly was mysteriously transformed into Pat Kelly (sans resume file) and was never heard from again.

The final trap came when BIX officials placed a bogus message in the moderator's private conference announcing: "Illinois State Police and McGraw-Hill Security have identified n.f. He is a juvenile in the Chicago area. The state police took him ... into custody early last week ... The police and security people are confident they have gotten n.f. since there have been no calls in over a week. They say n.f. should no longer be a problem." (Because n.f. often placed a phony Chicago address in his resume file, the popular opinion among moderators was that n.f. was a teenager living in the Chicago area.)

This message, I later learned, was needed to draw out n.f. one final time. The investigation had stalled—n.f. had simply stopped logging on. I've learned from sources close to n.f. that he had, in fact, decided to stop his reign of terror; however, he couldn't resist "just one more time."

The "bait" was placed by BIX officials at 5:37 EST. n.f. bit some four hours later, and he was arrested by the Secret Service in his Thousand Oaks, CA, home. At Secret Service headquarters, n.f. signed a full confession.

THE FINAL HOURS

On Wednesday, May 6, 1987, BIX released an official—to moderators only—notice, stating: "Siegmund Franz Kluger ... known as Sigi Kluger and skluger on the BYTE Information Exchange, was arrested ... by Secret Service agents ... Kluger was charged [under a federal law] which prohibits the knowing use, with intent to defraud, of one or more unauthorized access devices during a one-year period."

Kluger was arraigned before a U.S. magistrate in Los Angeles. He was released on a signature-secured bond despite the fact that FBI profilers noted in their profile that Kluger could be dangerous. (The U.S. magistrate did not have access to the FBI information.)

But Kluger, I've learned, won't be officially charged with computer fraud; that charge was just used to hold him. Sources at the U.S. Attorney's office said he will be tried on credit card fraud, a federal offense.

This explains why it took so long to apprehend Kluger, and why BIX let the anguish of his attacks continue. To present a case for credit card fraud, a person must commit at least 15 such acts. When BIX finally resorted to posting the bogus arrest message to bait Kluger, he had stopped one short, at 14.

Kluger's indictment before a U.S. grand jury was slated for June 1, 1987, with a trial date to be set at that time.

THE HUMAN ELEMENT

The most bizarre case of computer intrusion in online history has ended. The n.f. factor points out just how dark the dark side of this medium can get.

In walking back the cat to seek the genesis, do we exaggerate the human element? Maybe we don't exaggerate it enough.

If nothing else, the n.f. story makes us highly aware that, for all the high-tech gadgetry we "time rebels" place between ourselves and the outside world, the medium is still about people, dependent on people, and vulnerable to the very people trying to harness and define it. □

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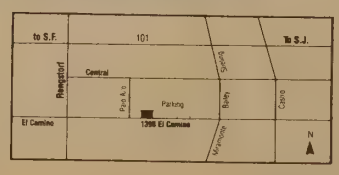

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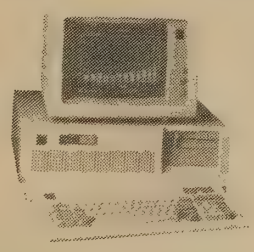

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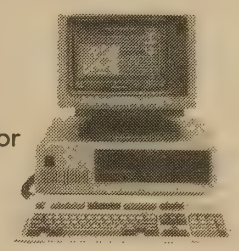

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The Hapless User's Tale

By Bennett Falk

Once upon a time, the Hapless User approached a group of UNIX gurus and asked, "Does anybody, uh, know how to turn a text file upside down?" The gurus suppressed the urge to ask why any sane person would want to invert a file and went away to mull the problem over.

Most of them thought Hapless would need to write a program in C to do what was asked, but after a while someone came up with a single command line that looked like this:

```
nl -ba filename | sort -r | cut -f2-100
```

This is actually a series of common UNIX commands strung together in a pipeline.

Improbable as it may seem, this patchwork command is a pretty good example of how UNIX is used in daily life. Quite apart from its wonders as an operating system, UNIX contains over 200 utilities and a number of nifty features for combining such software building blocks to do more complicated jobs.

FUN WITH PIPES

The pipeline to invert text files uses three UNIX commands: "**nl**", "**sort**", and "**cut**". "**nl**" simply numbers the lines of a file, the "**-ba**" flag directs **nl** to number all the lines and not just the lines containing text.

"**sort**" is a general purpose utility that, in this case, is simply sorting the numbered lines produced by **nl** in reverse order (this operation is signified by the "**-r**" flag attached to the command).

Once the contents of the file have been inverted, the "**cut**" command is used to strip out the numbers that were added by **nl**: the "**-f**" flag tells **cut** to select certain fields in each line of input. The "2-100" argument indicates that **cut** is to return the second through the one-hundredth fields of each line of input. (One hundred was chosen arbitrarily; we were confident that no line would have more than one hundred fields in it.) Happily, **cut** uses the TAB character as the default separator, and coincidentally **nl** uses a TAB character to separate the line number it inserts from the text of the line.

The vertical bars in the command line above deserve some special commentary. They are called "pipes," and UNIX uses this symbol to indicate that the output of one command is to become the input for the command that follows.

Pipes are a convenient way to pass data between processes. Ordinarily UNIX commands have one source of input (known as "standard input") and two output streams. One of the output streams ("standard error") handles error messages and diagnostic information, the other ("standard output") handles the normal output of the program being run. Most of the time standard input is the user's keyboard; standard out as well as standard error are both sent to the user's display monitor.

In the above example the output from **nl** becomes the input for **sort**, and **sort**'s output becomes the input for **cut**. After typing in the pipeline, no further input is required from the user, and output comes to the screen until the **cut** command is finished.

In addition to pipes, which connect processes to each other, UNIX also supports "file redirection," which enables users to substitute a file for any of a command's input or output streams. The pipeline to invert a file could be modified to send its output to a file rather than to the screen:

```
nl -ba filename | sort -r | cut -f2-100
    > filename2
```

The "greater than" sign before **filename2** is a redirection symbol; the finished product of the pipeline described above will be stored in a file with the name "filename2".

Hapless marveled at this solution to the problem of turning files upside down and asked the guru how she had done it. The guru smiled wryly and muttered that she had simply browsed through the UNIX Reference Manual until a strategy suggested itself.

THE PLUMBER'S FRIEND

Hapless went away much enlightened, but soon discovered that working with an operating system that thinks of itself as a toolbox can be frustrating—it's not always clear where to look to find the facilities you need. After one particularly aggravating session with a public bulletin board, Hapless was heard to cry, "This computer is brain damaged. At least when I use my PC to call other computers I can keep a log of the session in a disk file."

The gurus hemmed and hawed and explained "**cu**" to Hapless. "**cu**" is the utility UNIX provides to call other computers, and it's true that it has no built-in command to log a modem session to a disk file.

"I know that," snapped Hapless, "but isn't logging a modem session to disk a simple matter of redirecting the output of the **cu** command to a disk file?"

The gurus knew immediately that Hapless had tried something like:

```
cu systemname > logfile
```

Here **cu** is being used to call "**systemname**" and the output of that command is being stored in "logfile".

"This is true, as far as it goes," the gurus replied, "but the redirected output will go straight to the file and won't appear on your screen during the modem session. You will still be in control of **cu**'s input, but that's practically worthless without being able to see what's happening."

"I know," cried the anguished Hapless.

"To log a modem session, standard output needs to be sent to both the terminal and a disk file," the gurus replied nonchalantly. "The **tee** utility is provided to do exactly that:

```
cu | tee -i logfile
```

"The output from **cu** (which is basically your working session on a remote computer) is piped to **tee**, which saves that output in a file name "logfile" and displays the output on the screen. The '**-i**' flag tells **tee** to ignore interrupts, keystrokes in its input which might otherwise stop the command. This flag is needed because the remote computer might require some keystrokes that UNIX would ordinarily interpret as signals to exit or quit."

Notice that what started out as a complaint about **cu**'s lack of features was resolved without going back to the source code and rewriting **cu**. The gurus applied the tools UNIX provides to supplement a program's built-in features.

LIFE WITHOUT HARDWARE

After many months of trouble-free use, Hapless was one day heard to moan, "Ack! All these directories are a trap! I've been making files and subdirectories all this time and now I have to move them and it will take hours to make the new directories, **cd** into each of the old directories and copy the files to the new locations."

Hapless could, of course, go to the system administrator and demand that the directories that need to be moved be restored from a backup tape, but the system administrator already has more than enough to do and is known to have limited patience with Hapless.

Thinking one step further, Hapless could simply ask for a tape and copy all the files and directories to the tape with one command (say, "**tar -c directory**") and then move to the new directory and extract the files and directories from the tape with another command ("**tar -x**"). This would work, because **tar** will take the directory named on the command line—and all its contents including any subdirectories—and copy them to and from tape. But tape drives are notoriously busy when you need them, and reading and writing tapes can be a real burden on the system.

The gurus, however, tapped Hapless on the shoulder and whispered, "Leave the tape drive out of the process altogether, use this!" A crumpled paper was stuffed into Hapless' hand. Opening it, he read:

```
tar -cf - dirname | (cd newdir; tar -xf -)
```

In this pipeline "**tar -c**" is writing its archive to standard output, and this is being piped directly to another **tar** command which is extracting files and directories from the stream of data presented to it by standard input. Because the files need to be moved from one place in the directory hierarchy to another, parentheses are used to make sure a command to change to an appropriate directory is executed before the **tar** extraction command.

This command grouping works because the "**cd**" command needs no input from standard in and is executed first. The output of **tar -c** passes through the pipe directly to **tar -x**, the first command in the group looking for any input from standard in.

Hapless used the command the gurus gave him, and it worked. Once he had verified its success, he was careful to remove the original copies of his files and directories with a simple "**rm -r**". A week later the system administrator inquired condescendingly if perhaps Hapless needed some assistance in relocating his files. He smiled benignly and just said "No." □

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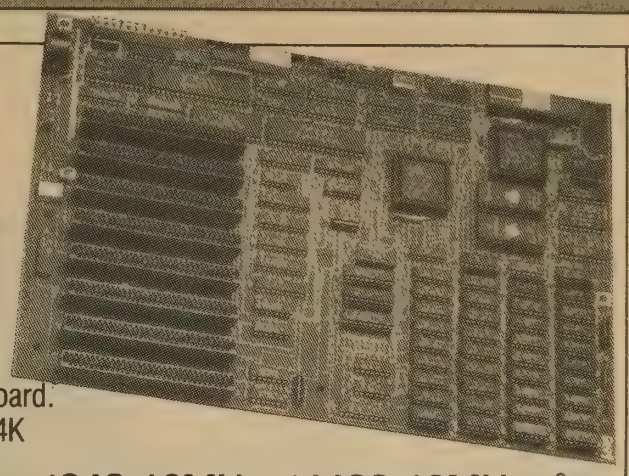

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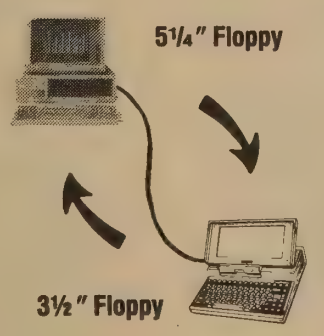

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Computer Systems and Peripherals

Menus From Databases

By Warren Sirota

One feature that I haven't seen in any of the applications generators that I've examined is the ability to turn database items into menu choices. Let me give an example: the manager of publications at Acme Publishing Company is not quite sure what titles are in her inventory, which are under development, which are in production, etc. What she'd like is a program that lists the titles that she has and allows her to pick one and see detailed information about it.

From a programming perspective, it would be quite easy to find a particular book if she already knew the title, and if she could spell it, or at least the first few characters of the title, exactly as it had been entered in the database. But these are unrealistic expectations of the user in many situations. Was the title "A Way Of All Being" or "The Way Of All Being"? The manager might well be excused for not remembering. You (the programmer) could resort to a substring search—if the manager just remembered that the word "being" was part of the title, then you could find the book. Or, at least, you could start to find the book in question, because there might be more than one with that word in the title. How do you present the choices to the user?

Most *dBASE* programmers would take the tack of presenting choices to the user one by one, asking "Is this the right title?" at each stage, and then moving on to the next. This is functional, but could be slow and cumbersome. Furthermore, there is still no way for the manager to browse through the titles if she doesn't know quite what she's looking for.

The code in the accompanying listing would allow her to page through all the titles available, and to simply move the light-bar cursor to a title and hit Enter to see detailed information. The code is written specifically for the *Clipper* compiler, as it takes advantage of *Clipper*'s array capabilities and light-bar PROMPT command. The code can be adapted to native *dBASE*, but it's non-trivial: you have to simulate arrays using macros, and ask for a numbered choice instead of having the user highlight it.

The array called ITEMLIST is set up to hold the record numbers of the items displayed on the screen at any one time. The core of the display algorithm is in the section commented as "title display loop" in the listing. As you SKIP through the database, displaying each title, you also stuff the appropriate ITEMLIST array element with the record number of the item that you're displaying.

There are 18 PROMPTs that are executed per page in this scheme. The first three are for control choices—Next Page, Restart, and Print List. The next 15 are for actual book titles. When the user hits Enter, the lightbar position is returned in the variable CHOICE. If she positions the lightbar to the first book and hits Enter, CHOICE will have a value of 4 (since the first book is the 4th PROMPT). Then, to figure out which record number that was, you merely subtract 3 from CHOICE and look up the value that you earlier placed into the ITEMLIST array (see the "otherwise" clause of the CASE statement near the bottom of the listing).

This routine doesn't provide for paging backwards. To extend it in that direction, you would set up PAGESTART as an array rather than a single variable, and then you'd always be able to figure out what the first record number in any previously-displayed page was.□

Copyright ©1987 by Warren Sirota. All rights reserved. *Warren Sirota is a database consultant with experience in a wide range of languages. He also composes and programs computer music. He lives in Oakland and can be reached at (415) 482-3979.*

```
* Listing
* by Warren Sirota
private done
DONE = .f.
dashes = replicate ('-',80)
equals = replicate ('=',80)
clear
use books index titles

clear

IPP = 15 && items per page
DECLARE itemlist[15]
if eof( )
  clear
  ? chr(7)
  ? 'There are no books to list.'
  wait
  return
endif

do while .not. eof() .and. .not. DONE
  clear
  set message to 4
  itemctr = 1

* lotus-like interface for top of screen
* (so sue me)
  set color to W+
  @ 1,0 say 'Book titles'
  @ 1,60 say 'Acme Publishing'
  set color to W
  @ 2,0 say DASHES
  @ 3,0 PROMPT 'Next page' message ;
    'See more books (if there are more)'
  @ 3,col()+5 PROMPT 'Restart' message ;
    'Restart Display from first book'
  @ 3,col()+5 PROMPT 'Print' message ;
    'Print this list'
  @ 5,0 say EQUALS
  set color to W+
  @ 6,0 say ;
  'Choose a book to see detailed information,'
  @ 6,col()+1 say '<Esc> to quit'

* printing the book titles as menu choices
  set color to W
  PAGESTART = recno()
  * display loop
  do while itemctr < = IPP .and. .not. eof()
    * store the record #s in the array
      itemlist[itemctr] = recno()
    @ itemctr+6,0 PROMPT title message ;
      'See detailed information for this book'
      itemctr = itemctr + 1
    skip
  enddo

  menu to choice
  do case
    case choice = 0
      DONE = .t.
      loop
    case choice = 1
      if eof()
        @ 23,0 say ;
        'There are no more books to view'
        ?? chr(7)
        wait
        go PAGESTART
      endif && eof()
      loop
    case choice = 2
      go top
      loop
    case choice = 3
      * call a routine to print the
      * whole list
      do PRTLIST
      clear
      go PAGESTART
    otherwise
      recnum = itemlist[choice-3]
      * call a routine to see detailed
      * information and edit it.
      do editbook with recnum
      clear

      * when coming back from a
      * different procedure, it's
      * a good idea to make sure that
      * your database files and
      * indices are still selected
      * properly, as follows:
      select books
      go top
      set index to titles
      go pagestart

      * deal with the possibility that
      * the user deleted the first record
      * on the page
      if deleted()
        skip
      endif
    endcase
  enddo && while .not. eof() .and. .not. DONE
  return
```

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Amiga All The Way

By Matthew Leeds

Time marches on. The demands of work, changing interests, and the perceived interest of my readership have led me to change the perspective of this column. Starting next month, I will no longer cover Commodore's eight-bit computers (64 & 128). Also, I've no plans to add the PC clones. This leaves me free to deal solely with the three Amiga computers. Should you have other opinions regarding coverage, please send letters. You'll still see reviews of Commodore eight-bit software elsewhere in the magazine, just not here.

The A500 may be out by now. Then again it may not. (One of the problems with writing a column with a six-week or so lead time is guessing what's going on in the future so I don't look stupid in the present.) At any rate, if you're considering purchasing an A500, read on. I've just finished several days of working with one and I've discovered a few things you may want to know about.

- The keyboard seems to have a very short travel. Heavy-handed typists will need to learn new habits.
- The internal disk drive is much quieter than the one on the A1000.
- The on/off switch is not on the computer, but on the separate power supply, which means you need to keep it within reach or plug it into a power strip within reach.
- Since all ports are on the back of the machine, monitor placement requires a very deep desk.
- Because the internal disk drive is on the right and the expansion port is on the left, you cannot place a monitor stand over the CPU—it must be placed behind it.
- Commodore will be selling a memory expansion (512K plus battery-backed clock/calendar) that plugs into a port underneath the A500. Although the list price of $199 for the expansion is reasonable, over time it will drop much lower, since CBM builds the expansion units on a one-for-one basis with the A500. Look for deals soon.

One discovery of great import: there is a serious problem with the internal memory expansion. Bear with me on the explanation. The Amiga has two forms of memory—chip and fast. Chip memory is where all graphics and sound processing occurs. The operating system also loads into chip memory. The A500 ships with 512K of chip memory (the limit that the current Agnes chip can address). There is a reserve address space of about 1.5 megabytes, known as C00000 memory, which has been set aside for use when a new Agnes chip is designed to expand the limit of chip memory to two megabytes. Several memory expansion products take advantage of this available space (and the fact that it automatically auto-configures), including the internal memory expansion board from CBM for the A500.

Fast memory is memory beyond the 512K of chip memory. The Amiga can move data around in fast memory without tying up processor time. This is known as Direct Memory Access or DMA, which allows for some very impressive graphics and sound programming.

The problem is that unless you do some clever things (difficult to do, but some third-party developers have discovered how), memory added to the C00000 space ends up looking like chip memory to the Amiga. This can't be. To access it, the Amiga needs to interrupt the CPU, slowing down whatever programs are running. Hence the name: slow/fast memory.

There are other aspects to this that I'll leave for a later date. The net effect of all this is that some, but not all, programs will experience a performance degradation. It would be possible to revise programs to compensate to a degree, but some current off-the-shelf software will run slower on an A500 than on an A1000. The A2000 may also suffer from this defect, but CBM is busy with possible redesigns that could address the problem.

Other possible incompatibilities include a few programs that will need to be revised to correct keyscan differences, and a few that flat-out will not run on any Amiga with C00000 memory (older versions of *Instant Music*, for example).

NEW SOFTWARE

Since this is the last time I will cover 64C/128 software, I thought it would only be fitting to mention a new product from from an irreverent company called CDA. The program is *The Graphics Transformer*, a graphics conversion utility for converting and enhancing graphics pictures between existing data formats on the 64C. This program will handle files from every graphics package ever written, and a few I've never heard of (*Sahara Abstraction*?). It will convert between Hi-res and Multicolor modes, and you can use it to create standalone, compressed, fast loading, autobooting files for slideshows or other uses. The entire program is menu driven, and very simple to use. The irreverent part will become clear once you've seen the packaging and the manual.

Prism is a Hold & Modify paint program from Impulse, Inc. It's the first HAM paint program I'd used, and it takes some getting used to. (For those of you who still have not heard of HAM mode on the Amiga, it lets you display all 4096 colors at once. However, since the color of any given pixel on the screen in HAM mode is controlled by the color of the previous three pixels on the horizontal scan line, you cannot change any given pixel without a side effect on other pixels.) *Prism* is similar in layout to *DPaint*. Many of the tools are the same. It doesn't have all the functionality, but it's very useful for touching up HAM images, adding text to HAM images, or creating from scratch. The program is hampered by one of the worst manuals I've ever seen. Although it describes each function, the explanations are cursory at best, and there is virtually no tutorial. The total lack of an index further complicates matters. You will need to spend quite a bit of time experimenting to discover how to use *Prism* effectively.

New Horizons Software has released an upgrade to *ProWrite*. The upgrade includes a new non-interlaced version of the program, a near letter quality option, and an improved font requester. Several minor bugs have been squashed. You can obtain the upgrade by mailing in your *ProWrite* master disk and requesting the new version.

Lion has released a two-disk collection of new fonts for *Amiga Art Studio*. Each disk has over 40 new fonts in a variety of sizes and typefaces. Lion uses a clever technique to let you keep your font directories on separate disks and change them at any time. Well worth the investment if you need additional fonts.

Accolade has released *Famous Course Disk Volume II* for *Mean 18*. It contains three new courses: Turnberry, Scotland; Inverness Club, Ohio; and Harbour Town, South Carolina. If you've parred out at all the courses on the *Mean 18* disk, these provide ample challenge to keep you occupied for many more hours.

If you're more interested in creating games than playing them, you should check out the *Programmer's Guide To The Amiga* by Robert A. Peck, published by Sybex. If you've got a grasp of the basics of C programming, this book will give you a head start on the ROM kernel manuals. Overviews of each of the Amiga's subsystems are accented with step-by-step programming examples which illustrate the proper use of system routines. There is a companion disk available with all of the sample code used in the book. Rob Peck was in charge of writing the Amiga ROM Kernel Manual, and has used his experience in that endeavor to create a companion book that provides a much easier entry into the world of AmigaDOS, Exec, Intuition, and the major components of the Amiga system. □

Resources:

CDA, Inc
561 N. Main Street
Yreka, CA 96097

Impulse, Inc
6870 Shingle Creek Parkway #112
Minneapolis, MN 55430

New Horizons Software
POB 43167
Austin, TX 78745

Lion's Amiga Art Studio
POB 42252
San Francisco, CA 94142

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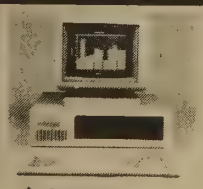

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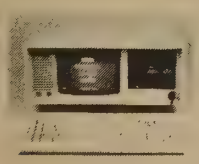

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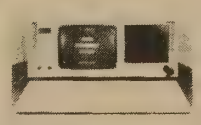

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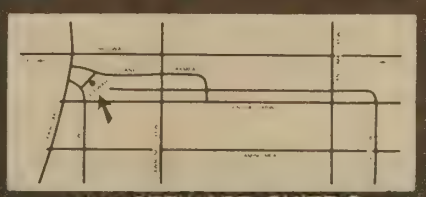

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Low-End Publishing, Plus Preview Of Coming Attractions

By Helmi Kobler

It's late May as I write this and summer is steadily on its way. It's a good thing, too. I like summer—the sun, the blue skies, the warm evenings, the blockbuster movies—it rivals Christmas. Summers are also a prime time for software releases, and the new ST titles are already beginning to arrive at a healthy pace. In fact, I'll probably end up missing a few days at the beach just to keep up with the UPS man.

But before I start on some of the newer software, I'd like to quickly wrap up last column's talk on desktop publishing. I had wanted to do a column on ST desktop publishing for months, and had planned to cover all aspects of the market, from the low-end poster makers to the full-blown page composition applications. But when I started writing the thing, I quickly realized that what I intended to say would never fit in my allotted space. So after devoting more or less a full column to Soft Logik's *Publishing Partner*, I'm left with a lot of products to talk about.

An important area of ST desktop publishing is at the low end. The multiple columns, variable point sizes and scaled graphics of expensive publishing packages are certainly handy in creating newsletters, but for a no-frills garage sale flyer or PTA announcement those expensive features may be overkill.

A program for producing material with your faithful dot matrix printer is Unison World's *PrintMaster Plus* ($49.95, un-protected). *PMP* will churn out letter-sized posters, cards, calendars, stationery and banners, graced with simple graphics and a few lines of text. The package comes with a library of 122 pictures, 10 fonts and 11 frame borders—the tools for page design. It also includes several printer drivers for most popular printers.

Of course, *PrintMaster Plus* isn't another *Publishing Partner*. There are too many limitations that stop it from creating anything complex—a page can accommodate only two different pictures, which, by the way, come in just three sizes. Usually only a few lines of text—not more than two or three words each—can fit on a page, and only in two sizes: regular and large.

But for doing the kind of jobs *PMP* was made to do, these shortcomings are insignificant. *PMP* does a great job in creating simple stuff that's useful but shouldn't take a lot of time to produce. For instance, I use it to generate deadline calendars for my user group newsletter, as well as some sharp Boy Scout meeting announcements—all designed from scratch in less than five minutes and printed with acceptable quality on a Epson LX-90 printer.

Unison World is also supporting *PMP* pretty well. It's published two supplemental Art Gallery disks of additional graphics, and is working on a Font and Border disk for release in the next couple of months. And finally, *PrintMaster Plus* didn't get its name for nothing—it's an upgrade of the original *PrintMaster* program. If you're a registered *PrintMaster* owner, I encourage you to upgrade to *Plus*. Not only has it got a new, more intuitive user interface but it will work with the new fonts and borders when they're released—something the older version won't do. For the *PrintMaster Plus* upgrade, send $15 to Unison World at 2150 Shattuck Avenue, Suite 902, Berkeley, CA 94704.

Another low-end publishing program, and a fairly new one, is *Certificate Maker* from Springboard Software (612/944-3912, $49.95, needs original master disk to run). You might already be familiar with the *Certificate Maker* name—it's a popular title for the Apple II, IBM PC and C-64, and good news for the ST—not just because it's yet another honest, useful package, but because it represents another well-established software developer moving into the ST market.

Certificate Maker lets you customize and print certificates on a dot matrix printer. The two-disk package comes with 220 pre-designed certificates that fall into just about every category you'd want a certificate for: Sports, Family, Academic, Children, Religious, General and Unique. Some of the certificates resemble those serious documents found in dentists' offices, while others are a little more light-hearted and sport amusing graphics, such as the Bad Haircut or Back Seat Driver Awards. Whatever your preference, enough certificates are included to satisfy everyone.

Certificates are customized only by adding text—graphics can't be imported, moved, or altered. Body text of several lines can be entered into most certificates along with a signature and date line. Five fonts of two sizes are available as well as several certificate borders. If you'd like to expand your *Certificate Maker* library, Springboard sells the *Certificate Library Volume 1* ($29.95), a collection of 104 new certificates and 24 borders.

Certificate Maker prints in acceptable dot matrix quality. It takes just a couple of minutes for a page to print, but it struck me that the output was too light, even with a fresh ink ribbon just installed in my Epson. *Certificate Maker* never repeats its printing to gain more boldness in a page like other programs do. *Publishing Partner*, for instance, prints every line of a document three times to get the most bold and sharp effect. I wish *Certificate Maker* did the same—it would have eliminated a good deal of that cheesy, dot matrix printer look that the certificates are printed in. Springboard would not have to make much of an effort to change this in a later version, but the result would make their certificates a lot more handsome and their software more useful.

Firebird, publisher of *The Pawn* and *Starglider*, is marketing another game called *Golden Path* ($44.95, copy protected). Taking place in ancient China, it's the story of a old man's mission to restore peace and prosperity in a land occupied by evil, wretched forces. Kind of typical, I thought. The game is labeled as an adventure—not exactly my cup of tea—with elements of action worked in. It's a little like Sierra Online's *King's Quest* games, where a character wanders around, interacting with other characters and solving puzzles until the ultimate goal is reached. If you like this type of game, then look further into *Golden Path*. I was actually more interested in a press release announcing another Firebird game expected to be ready—don't hold me to this, though—by mid-July.

It's called *Universal Military Simulator* ($44.95) and sounds like what all you armchair Macarthurs have been waiting for. And it's about time, too. War games are a fairly big thing on computers, but the ST has not seemed to have its share of them. *UMS*, though, should make up for the slow start. According to my press release, *UMS* features fractal graphics, head-to-head or computer-controlled opposition and lots of user-definable power. Players set up their own battle scenarios in terms of locale, geographical features, armaments, troops, opposition and other variables. "You can pit Stone Age man against a warrior from the year 2001, each replete with the weaponry indigenous to their respective periods," the release said. The game will also let you easily set up historical battle situations and change a few parameters to explore the "what if" possibilities—like what if Custer had brought 50,000 troops with him to Little Big Horn! A number of classic battles will be included on the *UMS* disk, while several "battle library" disks are being planned. So look for *UMS* in July.

I'm just about out of room again but still have plenty more to talk about. In the next few columns, look for talk on *DeskCart!*, the cartridge stuffed with desk accessories, *Fleet Street Publisher*, the latest entry in ST page composition software, *Superbase Personal*, a relational database system many ST users are swearing by, and *Cyber Studio*, one breathtaking CAD/Animation package. □

Helmi Kobler took his first step into the computer world in 1983 when he walked out of Macy's with an Atari 800 in his arms. Still an Atari user, he's now inseparably attached to his ST. He can be reached through MicroTimes *or e-mail <helmi> on The WELL at (415) 332-6106.*

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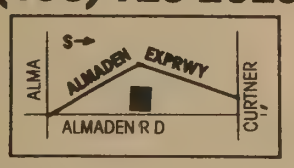

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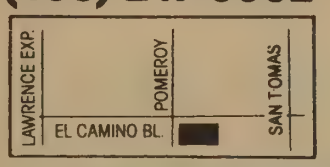

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Real Science On CP/M Computers–II

By Robert D. Athey Jr.

Continuing last month's discussion, Table I includes a listing of some CP/M-based software for scientific applications that's published commercially. You can find other software listed in the back pages of specialized magazines like *Civil Engineering*, also.

REPORTING EXPERIMENTAL RESULTS

On to what we started last month. Let's suppose you've done the experimental work on your project, and you want to see the results. The simplest way to test the work is to plot the results on an x-y axis to see if it produces a straight line, a curve, or a random array of points (called a "shotgun plot" by some of us). You can do that with pencil and paper as a first trial, of course, but if, like me, you're not the most artistic of draftsmen, it may be easier to use the computer to do the plot. You can use the spreadsheet as your plotter! What is a spreadsheet, after all, but a collection of expandable/contractable boxes?

Make each box two spaces wide (approximating a "square" cell in height and width) and proceed as follows:

1. Put in all your labels, for the axes and for the title at the top.
2. Put in the axes, with numbers at the appropriate spacings, to show the span of that axis. To start with (making the plotting easier), number top/bottom and left/right axes. You can erase/replace the top/left axis numbers after the plotting is done.
3. Place the points you want plotted in the appropriate cells.
4. Print the spread sheet to a file (to convert it to ASCII code).
5. Incorporate that file in or append to your text, as needed.

You can even make up a plotting template, as we show in Figure 1. If you have a semi-log or log-log plot to do, have the spreadsheet program calculate three significant figure values separately, print them out, and plot them on this template.

These plots may need to be accompanied by the straight line fit equation, with some estimate as to their precision. That can also be done on your spreadsheet, if necessary. Send me a self-addressed stamped envelope if you want that template. I do not have the confidence limit calculation in that template, though I often wish I did.

CONTOUR PLOTS

What about contour plots? That's much more

Bob Athey has over 20 years of experience working on computers and runs his own company on chemical consulting and contract research. He can be reached through MicroTimes or at (415) 526-3541.

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Table 1
SOME CP/M SCIENCE AND ENGINEERING SOFTWARE AND SOURCES

PROGRAM	SUPPLIER	FUNCTION
TUTSIMM	Applied i Suite 214, 200 California Ave. Palo Alto, CA 94306 415-325-4800	Dynamic process model simulation—electrical circuits, fluid flow or mechanical response to stress.
MICROMATE **Civ. Engr.** **Software**	Micromate P.O. Box 385 Graton, CA 95444 707-526-3106	Programs to: –Analyze hydraulic networks –Analyze frames and trusses –COGO surveying
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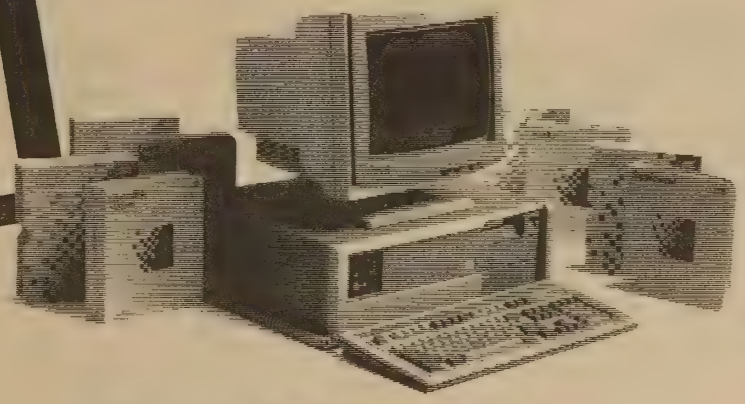

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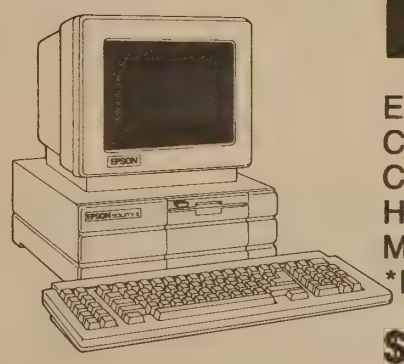

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complicated, but it can be done. So far I haven't had the occasion to do this, but here's how I'd do it on a two-variable model for each single response for a client that's willing to pay. It will take a substantial amount of time, not only for calculation, but for actual keyboard manipulation as well.

I'd first get a good x-y model equation (like "response = 1.1x − 2xy + 0.9y"), using something like the technique I discussed last month with *SL MICRO*. I'd put that in a spreadsheet in each of the cells of a 10×10 rectangular array, offset from the margin by one cell on the left.

Divide the input x and y values into small segments of their actual full range—perhaps in 100 equal steps for each.

Calculating the complete matrix of 100 x and 100 y values is 10,000 cells, and no CP/M spreadsheet can do that. But you can do a 10×10 array at any place within that larger array. Do a few such array calculations near the center and near the edges of the 100×100 array and see what the results look like.

In the left column, I'd put in the desired "y" values, and the desired "x" values would go in the 11th row across the bottom, with the formulae within the matrix keyed to calculate from the x and y values corresponding to their location (See Figure 2—all the formulae in center cells use the y to the immediate left and the x immediately below). Store these results in files labeled as to their location (like to a filename of "PLOT1×2Y.RES" where 1×2Y shows the location of the cells in the 100×100 matrix).

Now, for a contour plot, you generally want reasonable differences between response values, perhaps integral ones or tens. Look at the files you've printed and assign integral values to letters (like C=3, and D=4 and so on), and replace all integral values with letters, and all fractional values with spaces. You now shrink the central cells to be one space wide, and print to a file with the same filename and a new extent (something like "PLOT1×2Y.PRN"). You can now use a word processor (like *VDO*, even) to manipulate this file, to bring other such printed files, and to develop a feel for what the contour plot will look like. You'd have to do 100 of these to fill it completely, but you may only need to do 20 or 40, if the edge and center samples you've taken allow you to extrapolate between them.

If you set up an original matrix in some smaller size than the 100×100 we've talked about here, you may have a little less precision, but the 10 or 20 trial runs will give you a quicker shot at extrapolating the whole plot. A 50×50 matrix with less than 10 samples of the 10×10 matrices may be enough to fill the whole thing in by extrapolation.

We show a sampling pattern with ten of the 10×10 matrices over a 50×50 in Figure 3. To completely fill the 50×50 matrix, you'd have to do 25 of the 10×10 matrices, so this approach saves 60% of the calculation with little sacrifice on the big picture. You might be able to do as few as eight of these 10 by 10's and still get a reasonable view of the contours. Note that it fits on a single sheet of 8½"×11" computer paper—very nice for reports.

Is it worth it to figure out how to do your contour plot on a 64K RAM CP/M computer? It would take too much time for some of my clients, and they'd rather have me do the preliminary equation development (with *SL MICRO*) and then get the equation plotted off line to completely fill the plotted area (CompuServe does it well). But if I *had* to do it with just a 64K machine, I could. □

FIGURE 1
TEMPLATE FOR PLOTTING ON A SPREADSHEET

```
a b c d e f g h i j k l m n o p q r s t u v w x y z A B C D E F G H I J K
1
2                    (FILL IN TITLE OF GRAPH)
3
4          9   +
5              :
6              :
7              :
8              :
9              :
10         8   +
11             :
12             :
13             :
14             :
15         7   +
16             :
17 LEFT        :
18 AXIS        :
19 LABEL       :
20         6   +
21             :
22             :
23             :
24             :
25         5   +
26             :
27             :
28             :
29             :
50             :
51             :
52         0   +------+------+------+------+------+------+------+------+
53             0      1      2      3      4      5      6      7      8
54
55                        BOTTOM AXIS LABEL
56
57                      -=+ LEGEND +=-
58
59
60
61
62
```

BOTTOM AXIS LABEL

−=+ LEGEND +=−

Point	:	Sample
A	:	Untreated Plastic
B	:	Treated 1 hour
C	:	Treated 3 hours

FIGURE 2
TEMPLATE FOR CONTOUR PLOTTING ON A SPREADSHEET

	a	b	c	d	e	f	g	h	i	j	k
1											
2					Contour plot of 1.1x − 2xy + 0.9y						
3											
4	y1	(1.1 * a4) − (2 * a4 * b13) + (.9 * b13)									
5	y2										
6	y3										
7	y4										
8	y5										
9	y6										
0	y7										
10	y9										
11	y8										
12	y10										
13		x1	x2	x3	x4	x5	x6	x7	x8	x9	x10

FIGURE 3
Representative Sampling of a 50×50 Matrix With Simulated Contours for Extrapolation

```
. . . . . .   . . .AAAAAA.   AA. . . . . .
. . . . . .   AAAA. . . . .   .AA. . . . . .
. . . . . AAA . . . . . .   . . .AA. . . . .
. . . . AA. . . .   . . .BBBBB. .   . . . . .A. . . .
. . AA. . . . . .   .BB. . . . .BB   . . . . . .A. . .
. A. . . . . .   B. . . . . .   . . . . . .A. .
A. . . . . .   . . . . . .   . . . . . .A. .
. . . . . .BB   . .CCCC. . . .   BB. . . . .A. .
. . . . . .BB. .   CC. . . .CC. .   .B. . . . .A. .
. . . . .B. . . .   . . . . . .CC   .B. . . . .A. .

. .CC. . . . . .   . . . . . .B. .
.CC. . . . . .   C. . . . . .BB.
C. . . . . .   CC. . . . . .B.
. . . . . .   CC. . . . . .B.
. . . . . .   C. . . . . .B.
. . . . . .   . . . . . .B.
. . . . . .   . . . . . .BB
. . . . . .   . . . . . .B
. . . . . .C   . . . . . .B
. . . . . .CC   . . . . . .B

Time, minutes

. . .CC. . . . .   . . . . . .B
.CC. . . . . .   . . . . . .B
C. . . . . .   . . . . . .B
. . . . . .CCC   . . . . . .B
. . . . .CC. . .   C. . . . . .B
. . .CC. . . . .   CC. . . . . .B
.CC. . . . . .   .C. . . . . .B
C. . . . . .   .C. . . . . .B
. . . . . .   .C. . . . . .B
C. . . . . .   C. . . . . .B

. . . . . .C. .   . . . . . .CC. . .   . .BB. . .AAA
. . . . . .C.   . . . . . .CC. . .   .BB. .AA. . .
. . . . . .C   . .CCC. . . . .   BB. .AA. . . .
. . . . . .   CC. . . . .BBB   B.AA. . . . . .
. . . . . .   . . .BBBB. . .   .A. . . . . .
. . . . . .   . .B. . . . . .   A. . . . . .
. . . . . .   .B. . . . . .   . . . . . .
. . . . . .   B. . . . . .A   . . . . . .
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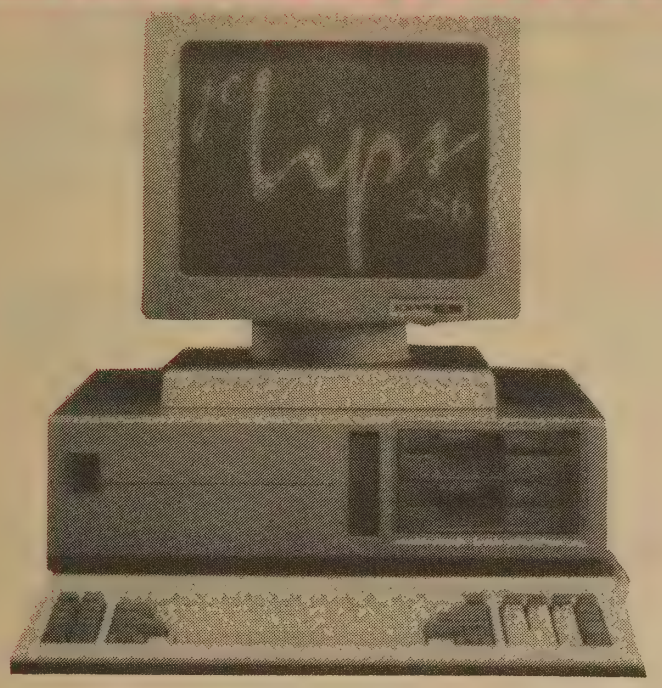

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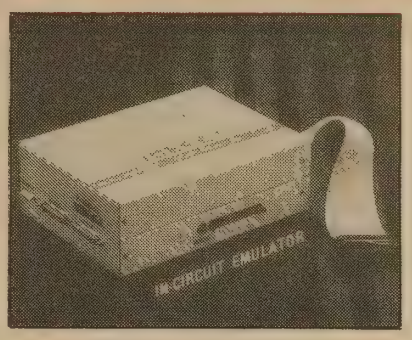

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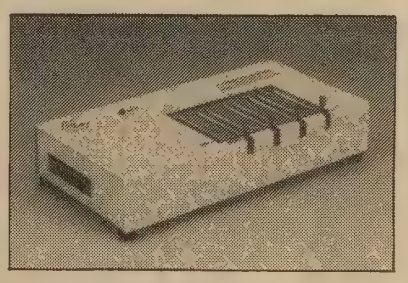

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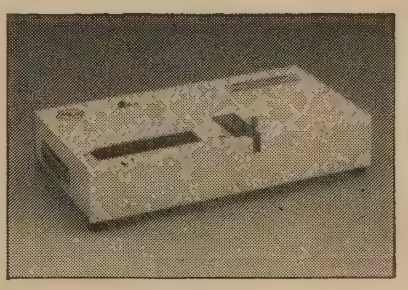

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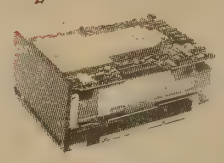

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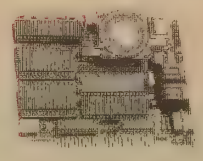

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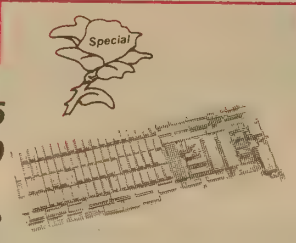

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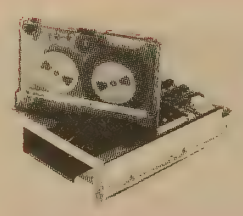

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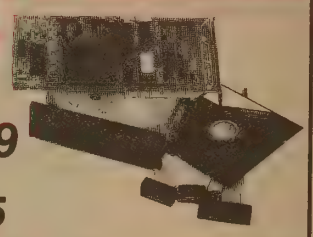

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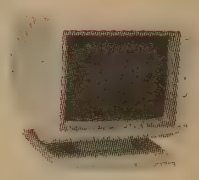

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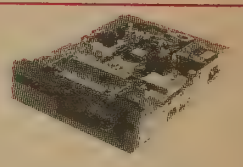

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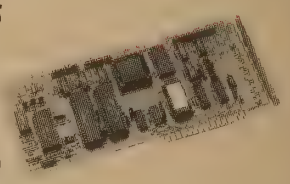

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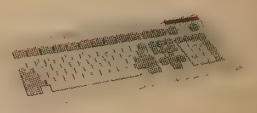

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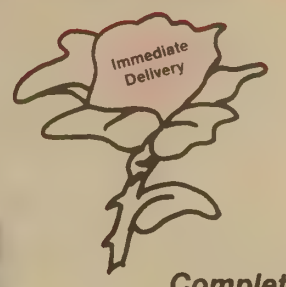

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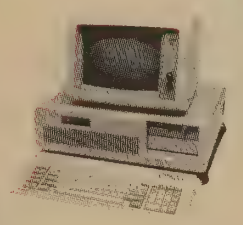

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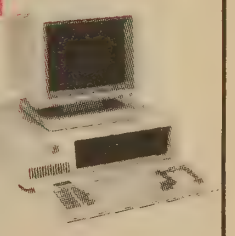

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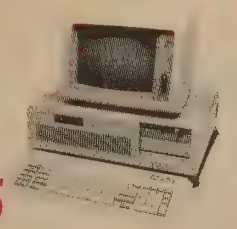

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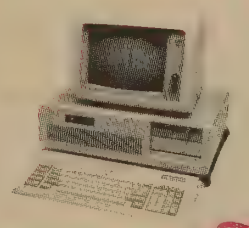

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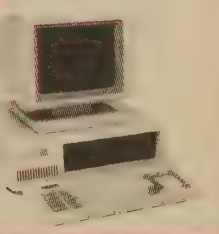

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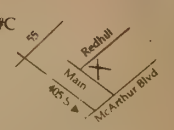

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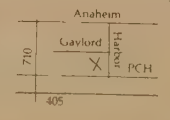

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More Color Clip Art For The Amiga

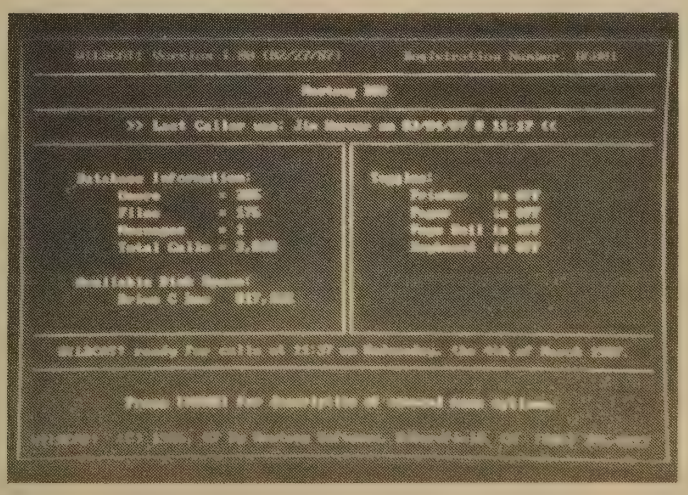
Art Parts; Volume 2 and *Seasons & Holidays* from Electronic Arts are color clip art disks for use with *DeluxePaint II*, *DeluxePrint* and *DeluxeVideo* on the Amiga. *Art Parts* has over 125 professionally created images and brushes covering a wide assortment of subjects. *Seasons & Holidays* provides ready to use images for special occasions such as birthdays, weddings and holidays. ($29.95 each) Electronic Arts, 1820 Gateway Drive, San Mateo CA 94404.

SuperCalc 4 Gets 101 Macros From Macropac

101 Macros for SuperCalc 4 is a collection of keystroke savers, shortcuts and utilities. Among other features it eliminates repetitive keystrokes and complicated menu selections. It also speeds up recalculation time, addresses form letters and prints labels automatically, and creates graphic slide shows. ($69.95) Macropac International at 19885 Stevens Creek Blvd., Suite 168, Cupertino, CA 95014. (800) 832-7766.

Wildcat! Is BBS Software For Businesses

Wildcat! is an electronic bulletin board program from Mustang Software. It is a full featured system that can be operated equally well as an open or closed dial in system. It is designed primarily for the business user as a tool for communications between offices, field employees or for customer support. ($89) Mustang Software, 3125 19th street, Suite 162, Bakersfield, CA 93301-3118 (805) 395-0223.



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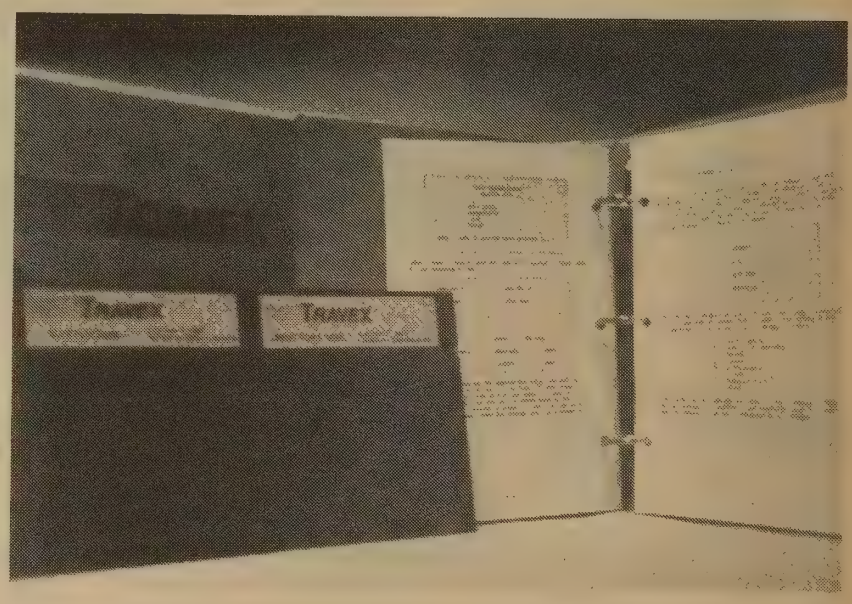
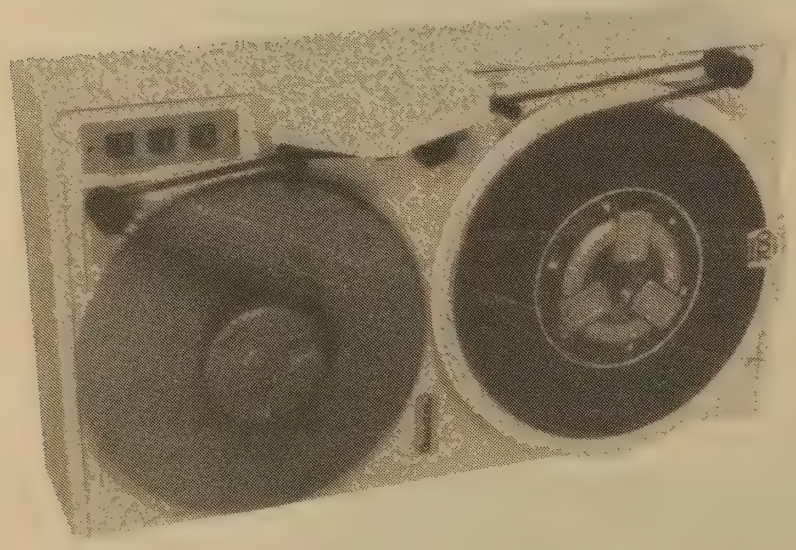
Travex Keeps Tabs On Traveling Expenses.

Travex is a software package for reporting and controlling business travel expenses. It prepares reports that show how funds were spent and how much a particular employee, department, division or company spent on a particular airline or hotel. Management reports also provide for compliance with the new 80% limitation on meals and entertainment under the 1986 tax reform act. ($89.95) Companion Data Corporation, P.O. Box 3171 Laguna Hills, CA 92645. (714) 855-7254.



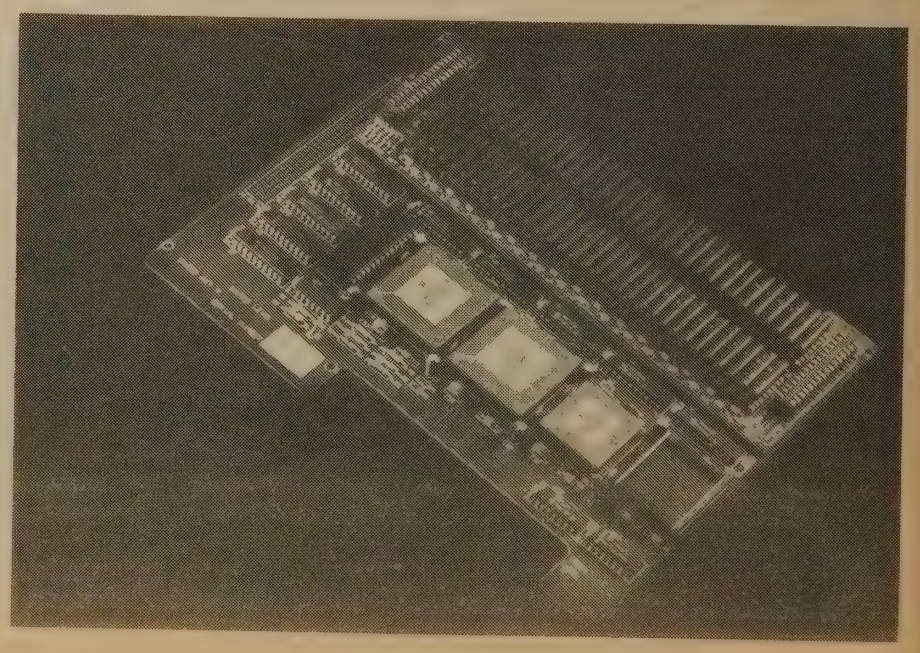


Ministreamer Allows You To Transport Data From Your Mac To A Mainframe

The Ministreamer, a 9 track, half inch reel-to-reel tape drive, provides Macintosh users with a means of transporting data between personal computers and mainframes. Any reel can easily be moved from the Mac to PCs, minis or mainframes with no loss of data. The Ministreamer is fully IBM/ANSI compatible. It also acts as a high speed back-up system. ($3995.) Qualstar Corporation, 9621 Irondale Ave., Chatsworth, CA 91311. (818) 882-5822.

Prodigy SE Transforms Your Mac SE Into A Minicomputer-Class Workstation

The Prodigy SE from Levco is a performance enhancement board for the Macintosh SE transforming it into a mini computer class workstation. Along with offering expansion capablities it is capable of running Macintosh applications four to ten times faster. The optional math coprocessor can boost the speed of calculation intensive software to over 100 times faster than the standard Macintosh. (Prices start at $1995.) Levco, 6160 Lusk Blvd. Suite C-203, San Diego, CA 92121 (619) 457-2011.



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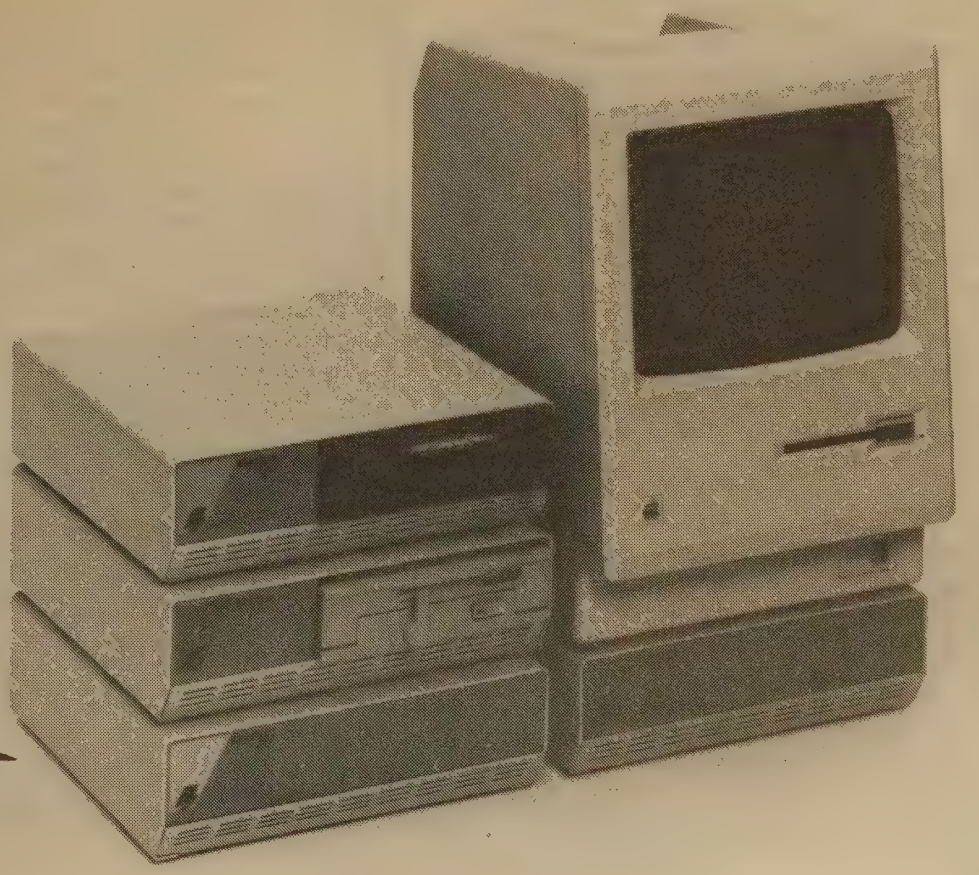

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CPSA Livermore (415) 443-9086
Julian Systems Concord CA (415) 686-4400
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USER GROUP NETWORK

By Mary Eisenhart

May 13 found me paying a return visit to **East Bay FOG** (First Osborne Group), and a memorable occasion it was. The original plan was that our CP/M ace **Bob Athey** would be along to offer helpful hints and advice to the various Osborne and other CP/M enthusiasts in attendance. Alas, the Exalted Athey was unexpectedly called out of town on biz, so the FOGers got one CP/M-illiterate Macintosh-using editor instead. ("Hey, I once did some data entry on a mailing list that was written in *dBASE II*," I offered hopefully...)

The FOGers, however, were both congenial and sympathetic, and the evening proved informative and fascinating—providing a relatively rare opportunity to carry on a conversation with readers and get some much-needed feedback (yes, gentle readers, especially those who so faithfully send in your listings, it may amaze you to know that sometimes *months* go by without a single letter to the editor gracing our mailbox, but so it sometimes is).

At issue was the current and future state of CP/M, the demise of which has been trumpeted from the housetops for some time. FOG itself has evolved beyond its Osborne origins and now supports MS-DOS as well as non-Osborne CP/M machines, a policy which occasioned religious wars some time ago but now seems generally accepted. So being with a roomful of FOGers, I decided to get their views on the subject—as well as their ideas as to what *MicroTimes* as a magazine ought to be doing to serve their needs.

There were quite a few surprises. Most predictably, the group seemed divided almost 50-50 between DOS and CP/M users, with a significant number of people who used both systems. Most of those who had migrated to DOS seem to have made the move because it made it easier to work on the same files at home and at work. Most of the CP/M faithful seemed to use their machines chiefly for word processing.

As for the death of CP/M, though, it seems to be a very lively corpse. One member who'd brought his Commodore 128 to the meeting maintained that there was considerable interest in the operating system among new Commodore users, to the degree that one San Jose Commodore group is affiliating its CP/M SIG with the national FOG organization (there were no Apple II users at this particular meeting, though there's a significant number of users running CP/M on their IIs, too).

Another member pointed out that, despite the dearth of general-purpose commercial software for CP/M, there was still vigorous development of CP/M-based vertical applications, notably industrial control systems. Yet another painted a glowing picture of a network on the UC campus that links CP/M, MS-DOS and UNIX machines to a single VAX. (Intrepid writers will bring you details in future issues.)

One gentleman offered an interesting perspective on the software-shortage issue—it seemed that he and his buddy had sat down and written a simple-to-use program that performed those loathsome mathematical calculations like amortization of loan payments and the like. "You ought to see it," he enthused. "I'm a financial idiot," I demurred. "Then you're just the person who ought to be using it!" he countered. Anyway, the authors had had a discouraging time of it trying to sell this program, simple, written-in-BASIC, but useful as it was, and didn't see much commercial potential. "Uh, what about shareware? The first *PC-Talk* was written in BASIC and it did ok ..." "What's shareware?" said the author.

There ensued a lively discussion of free/share/beggarware, amid many tales of riches and ruin, and also a certain amount of speculation about why this marketing approach is so prevalent in the DOS world and so un-prevalent in most of the other computer universes.

No earth-shaking answers were reached, of course, but everybody seems to have gone home with plenty of new ideas to think about. I know I did. Thanks to **Pat Watters** of East Bay FOG for the invitation that made this evening possible, and to **Jean Koch** for the ride to the meeting, my car having gone to Honda Heaven.

By the way, interested parties in the Bay Area are invited to the June meeting of East Bay FOG, when the featured speaker will be **Adam Osborne** himself, who brought forth the Osborne computer and subsequently migrated DOS-wards. Osborne's renowned Way With Words aside, discussion promises to be lively, since he's been proclaiming the death of CP/M for quite some time now. The meeting will be June 10 at EBFOG's new meeting location at the Apostleship of the Sea in Oakland. Call (415) 272-9099 for information.

In other news: **David Gray** would like computers-and-music enthusiasts to know about the **Computer Music Users' Group**, which started life as a SIG of the Berkeley Macintosh User Group. Now, says David, "we have allegiances to no one manufacturer of computers, electronic music equipment, or software. Meetings usually feature one product, presented by the developer or a representative. Occasionally we feature special manufacturers' presentations—past presentations have included Digidesign, Ensoniq, and Axxess (the mapper)."

He continues, "We usually meet alternate Saturdays at Leo's in Oakland at 10 am. We are compiling a sample (Digidesign format) library and libraries for popular synthesizers." Leo's Audio and Music Technologies, the meeting location, can be found at 5447 Telegraph Avenue, Oakland. The phone number is (415) 652-1553, and either David himself or **Bill Thompson** will be glad to answer your questions. Meetings, incidentally, are free.

Michael Banyacki of Mission Viejo is starting a **Leading Edge** user group thereabouts. Plans include training in DOS, *Framework*, and *dBASE III+*, as well as utilities and public domain software for members. Call (714) 770-3172 and leave your name and phone number if you'd like more info.

The ever-enthusiastic **Helmi Kobler** wants me to remind you about the **Atari Expo** at the Santa Clara Convention Center June 18 and 19. Exhibits, seminars, giveaways and speakers galore. Check it out, and call Atari at (408) 745-2000 for further info.

And as long as we're talking about those machine-specific expos we know and love, **AppleFest** returns to the Bay Area September 18-20 in the San Francisco Civic Auditorium. Thanks to **Bill Cleary** for the early notice—you can call (617) 271-0400 for more information.

This month brings us more interesting BBS listings. **Mark Smith** of Berkeley sends word of the **Feminist BBS** in Chicago, which is looking for new users. Says Mark, "One user just called Fem BBS 'an intellectual oasis in the CompuDesert,'" which ought to justify a call or two. The sysop is **Susan B. Anthony** (**Linda Grossman** to her friends), ably assisted by **Colleen Devlin.** You can reach the Feminist BBS at (312) 225-9138—it runs 24 hours a day at 300/1200 baud, 8-N-1.

Forrest Litke invites you to the **Long Beach Bulletin Board,** which has been entertaining 3000+ users for the last three years. Special interest sections include CAD/CAM and MIDI, as well as classified ads, games, and discussions. LBBB runs 24 hours a day, 300/1200/2400, 8-N-1, at (213)438-6783.

The Landing Strip BBS (213/597-7773) is dedicated to aviation and online adventure games. It offers aviation-related downloads for IBM computers and also offers downloads for Apple II and Commodore 64 machines. It runs at 300/1200 baud on WWIV software—"the state of the art in BBS systems," boasts sysop **One-Eight Charlie.** And the **Teenplex BBS,** a board devoted to teenagers, offers message bases on general, games, hardware, software, and consulting. It also supports Commodore and Atari file transfers. You'll find this board at (818) 289-6840, 300/1200, 24 hours.

Then there's **Uncle Tim Beckwith,** somewhere out there in the 916 area code, who invites you into **Uncle Tim's Hot Tub BBS,** which he characterizes as "a clothing-optional experience coming live from Almost-Elk Grove, California." Sub-tubs include Amiga, Naturism/Nudism, C Language, Politics, Other Boards, and the always-popular Tasteless Tub. For this never-to-be-forgotten experience, call (916) 689-4670 any time. The board runs at 300/1200, 8-N-1.

That's about it for now. Keep those messages coming, electronically to The WELL (415/332-6106—send mail to **microx**) and otherwise to 5951 Canning St., Oakland, CA 94609. See you next month! □

BULLETIN BOARDS

065

Remote Bulletin Board. (065) 242-7669 (Singapore). 24 hours, N-8-1, 300/1200/2400, UL/DL 67 meg. Sysop: Umar A. Rahman.

206

The Board Of Review. (206) 361-8018. 300/1200 baud, 8-N-1, 24-hours, Commodore. Sysop: Ron Strauss..

28 Barbary Lane. (206) 323-2828. 300/1200 baud, 8 bits, 1 Stop Bit, Full Duplex, No Parity, 24-hours. Sysop: Mrs. Madrigal.

209

Region 7 TEC Center BBS. (209) 571-5085. Specializing in music and schools. 24 hrs, 300 baud. Sysop: Dan Guerra.

Inn Finity BBS. (209) 521-6240. Inn Finity is an Atari based BBS. Operates on a 130XE with 320K. Signalman 300/1200/2400 baud, 24 hours a day. ATASCII—ASCII. Sysops Buzz and Jann Kelley.

Bullseye BBS. Stockton, CA. (209) 474-FIDO. IBM and compatibles. 300/1200/2400 baud. Open 24 hours, 8-N-1, FidoNet 161/31 Valley PCUG. Sysop: Bob Loeber. Validation required. Lots of MS-DOS shareware.

The Spotlight BBS. (209) 368-5591. 300 baud, 24 hours, 8-N-1, dual drive Commodore 64 operated. Sysop: The Spot.

213

Aware II (213) 851-0780. Sports BBS with different discussion boards centered around USFL, baseball, etc.

Marina Matchup (213) 397-6300. This Mar Vista-based dating board operates with Martian software.

Lynzie's Motherboard (818) 508-6482/(213) 650-0519. 24 hours, 300/1200/2400 baud, 8-N-1. Private E-mail, download library, dating matchup, interactive chat between users, 4 phone lines on rotary. Public boards include employment, food and restaurant reviews, sci-fi, political, debate, for sale and many more. Monthly social happenings for local users. Sysop: Lynzie Flynn.

Bulletin Board System. BBS devoted to handicappers and racing fans in So. Cal. On line every weekend. Log-on: race data for Santa Anita, Hollywood Park and Del Mar. (213) 934-6026.

Videodrome BBS. Where computers and video meet. (213) 324-5882. Open weekdays 4 pm - 2 am, weekends 12 pm - 2 am. A Commodore 64 system.

HUG1. The official BBS of the Hollywood Commodore User Group (HUG). All HUG members and visitors are welcome to drop by. (213) 874-8256.

The Wargames RBBS. Call for one of the best IBM RBBS around, running with the latest merge for RBBS-PC. Win free time weekly with secret password. Features include the latest PC news, special news reports, BBS listing, messages, e-mail, downloading/uploading, color/music online. Best of all, it's FREE! Operating 24 hours a day at 2400/1200 baud. NO 300 BAUD ALLOWED! Sysop: Jason Lin (213) 393-9777.

International Collectors Network. Coins, stamps, baseball cards, books, records, antiques and anything collectable can be bought, sold, or traded on the International Collectors Network BBS. Regional lists of collector events and shows in many categories. Also names and addresses of many collector organizations. Accessible using PC Pursuit. Data phone available 24 hours, 7 days at 300/450/1200/2400, 8, N,1. (213) 204-0646.

The Computer Consultant's Network, (213) 479-4074. Running a modified version of Martian! Software. 24 hours a day. This is not a job board, but merely a place for computer professionals to network and share information.

Computer Conference Center. (213) 212-5267. TBBS w. Com-

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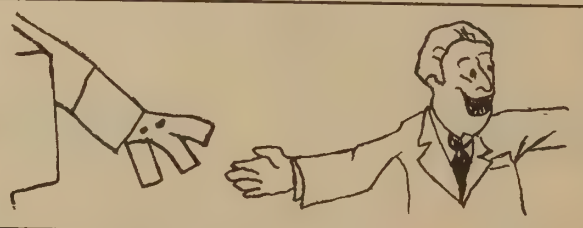

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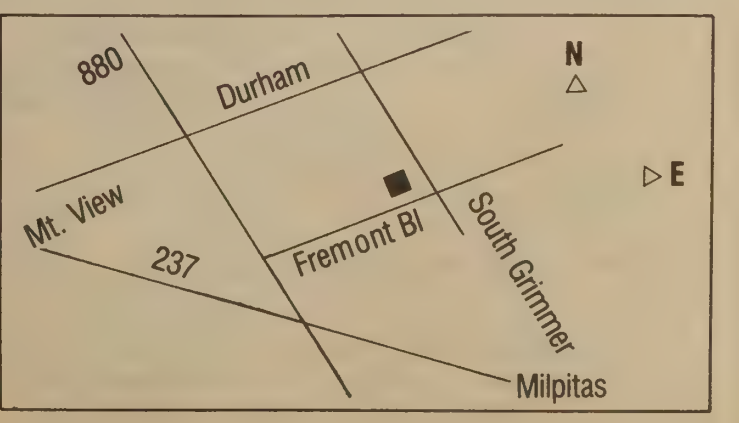

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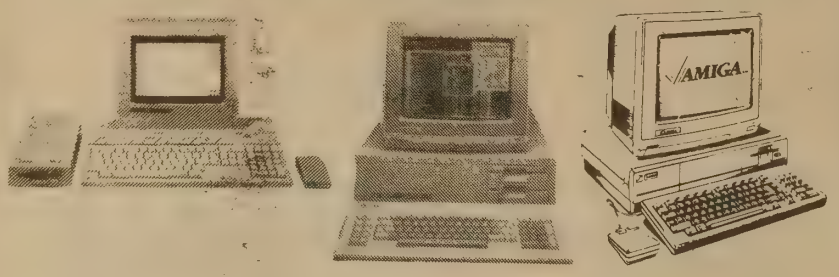

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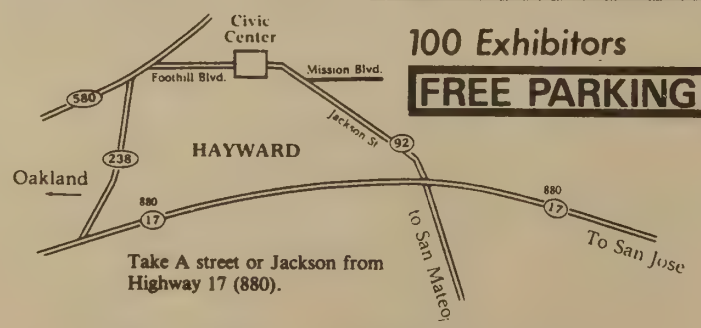

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Vaudeville Local. (415) 337-8693. 24 hours, 8-N-1, 300/1200. Vaudeville Local is a BBS dedicated to vaudeville and circus arts. Sysop: Arthur Conway.

Crossroads BBS. (415) 968-9341. 300/1200 baud, 8 bits, no parity. 24 hour operation. File transfer for IBM/compatibles, Commodore 64. Message bases include space travel, singles, political dissent, sexual freedom, stories, poetry, musician's referral, programmer's corner, adventure gaming. No fee. Mike Macgirvin, sysop.

LaserWriter BBS. (415) 261-4813. 300/1200 baud, 24 hours. BBS dedicated to desktop publishing. Sysop answers all related questions. Located within Allen Computer Graphics, desktop publishing specialists. Files, messaging, user groups, e-mail. Upload direct for LaserWriter printout or to order other products offered by Allen Computer Graphics. Macintosh and other computers welcome. Sysop: Tom Allen.

The Records Department. (415) 426-0470. User registration required. Public domain and shareware programs available for download at 300/1200/2400 baud. Caters to IBM; also Apple, Commodore, Atari. Large, friendly discussion section with something for everybody; games, voting booth, technical help. Bill McCauley, sysop.

Silicon Valley Computer Society BBS. (415) 968-6891, 300/1200, 24 hours. Sysop: Herb Shear.

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KAY+FUN RCP/M. (415) 572-8219. MS-DOS, CP/M, modems, business applications (e.g. *dBASE, Lotus, Reflex,* Wordproc). General discussion of commercial and public domain software. Also public domain and private file transfers and more. FREE online registration. 300/1200/2400. Sysop: Ernest Hintz. Sponsored by KAYFUN users group.

Programmer's Circle. (415) 239-1722. 8-N-1, 300/1200, weekdays 3 pm-11pm. The Programmer's Circle specializes in carrying source code and tools to aid the programmer. Special attention is given to the Macintosh and Apple II computers, but all computer users are welcomed. Data files are online for the Mac and Apple II computers. Sysop: Roger Gibby.

The Live Wire. (415) 540-0529. 300/1200, 24 hours. A digital magazine for the graphic-arts community (printers, typesetters, self-publishers, artists). Free. Sysop: Rick Hepting.

SIGSIG BBS/RCP (formerly MEBBS) is back online! Member of the FOG and PRACSA networks. Supporting CP/M and MS-DOS public domain software and a public-access message system. No fees, novices welcome. Online registration for FOG, PICONET and PRACSA members. 24 hours, 300/1200/2400 baud. Sysop: Jim Switz. Located in Mountain View. (415) 968-7369. Call today!

Cold Moon On A Single Star. (415) 668-6101, San Francisco. 24 hours, Fido board. Chinese culture, history, language, Chinese cooking, discussion, etc. Asian community events. Sysops: Joseph Puig and Susan Chen.

Dr. Don's TBBS. (415) 885-1973, San Francisco. 300/1200, 24 hours. CarTalk and SportsTalk discussion and special interest boards. Private e-mail. All automobile sportscar enthusiasts, sports fans, softball-baseball-football players are invited to call. Sysop: Dr. Don. Co-sysop: Bimmer Pilot.

Centerville RBBS. (415) 793-3037. 300/1200/2400 baud, E-7-1 or N-8-1, 24 hours daily. Sysop: Joe Halbleib.

The Board. (415) 652-8277. 1200/2400 baud, 8-N-1, 24 hours. Public and private conferences, technical support. For AT&T and compatibles; AT&T PC support conferences. Associated with Bay Area AT&T PC6300 Users' Group. Sysop: Troy Blackburn.

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The Wizard Net. (415) 481-8413 San Leandro; (415) 232-6981 San Pablo. Full duplex, 1 stop bit, no parity, 6 am-6pm M-F, 24 hours weekends, 300/1200 baud. A user friendly system that utilizes Commodore color graphics. The more time that you put into the system the more you will be able to get out of it. System has bulletin boards, e-mail, voting booth, a chat feature, ul/dl, and online games. There are no fees, and everyone is welcome. Registration required. Sysops: Dave Rasmussen, Keith Parrish, Olivia Parrish.

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SFPCjr UG BBS. Sponsored by the SF PCjr User Group. 1200 baud, 8-N-1, 24 hours. Sysop: Larry Buoncristiani.

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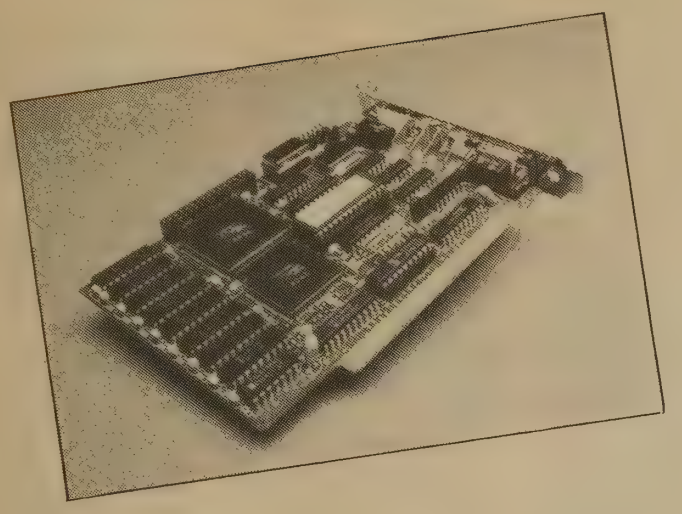

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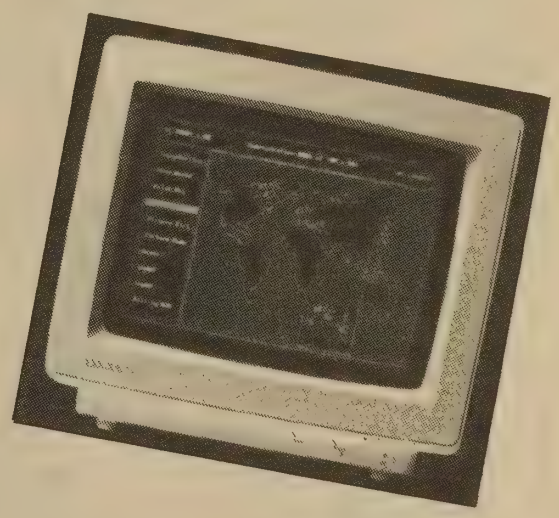

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Production World On-Line. (415) 571-6160, 300/1200/2400 baudd, 24-hours. An additional service from **Production World On-Paper**, a printed publication for the motion picture film, broadcast television, video and audio communities featuring Northern California people and facilities. A variety of information and message bases available. Sysop: Wes Dorman.

Amiga Addicts Anonymous BBS. (415) 283-5469 "BUD-LINX." 24-hours, Xmodem, 300/1200 baud, N/8/1. Sysop: Randy Spencer.

Aardwolf Express Family Forum. (415) 651-4147. 24 hours a day, 7 days a week. 300/1200/2400 baud. Located in Fremont CA. System offers: *Infomat*, an electronic computer magazine; Showcase, shareware and demonstration programs download; complete King James Version of Bible online; Discovery (Christianity); Friends (user profiles and interests) and user opinion polls. Sysop: Veit Anton Johnson.

The Guardian. (415) 644-6806. The Berkeley Police Department's public relations and community service bulletin board. Lists crime prevention information including neighborhood and business watches, crime statistics and recent press releases. Community organizations are encouraged to call and post events. Everyone invited, you need not be a Berkeley citizen. 24-hours, 7 days a week, 300/1200 baud. Sysop: Officer Carl Orsi.

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619

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702

Public Domain Software Interest Group. (702) 794-3665. 24 hours, 300/1200/2400 baud, 8-N-1. Public domain software available for downloading, message board, and user supported donations of software. Sysop: T. Heisserman.

707

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The WOCCUG Board. Operated by West Orange County Commodore User Group. EBBS, 8-N-1, 24 hrs, 300/1200. (714) 772-4182. Sysop: Mark Stanford.

The Buckeye BBS. (714) 821-0589. C64, Punter, Xmodem, 300/1200 baud, 24 hours. Sysop: Art Collins.

FBBS. (714) 823-3673. 24 hrs., 300/1200 baud, full duplex. 50 megabyte system based in Fontana. Downloads for Commodore, Amiga, IBM, Atari, Apple, CP/M. 17 active message bases, weekly online magazine. Sysop: Larry Krzewinski.

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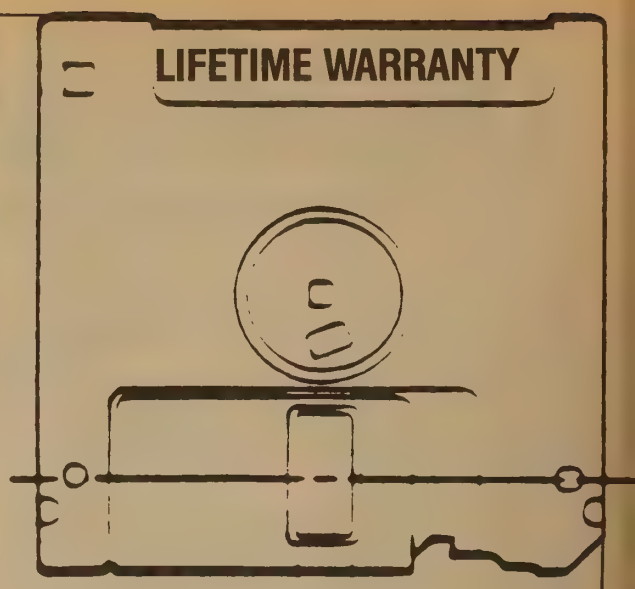

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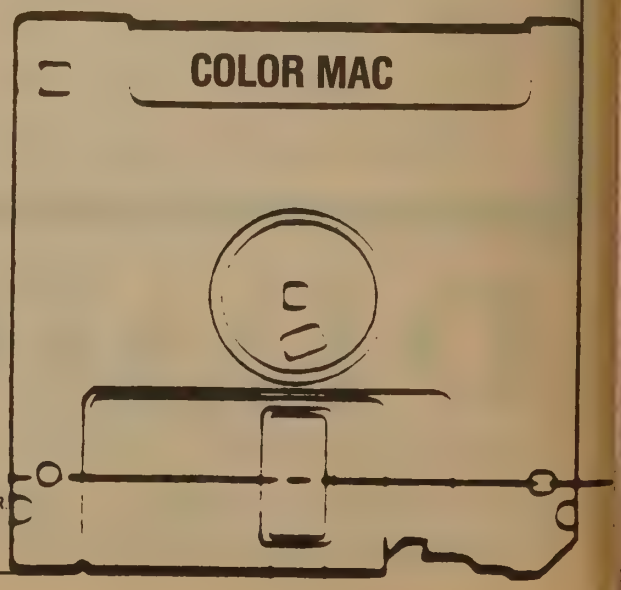

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717

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818

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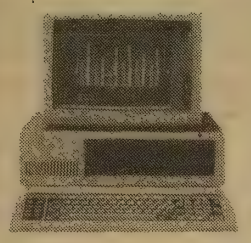

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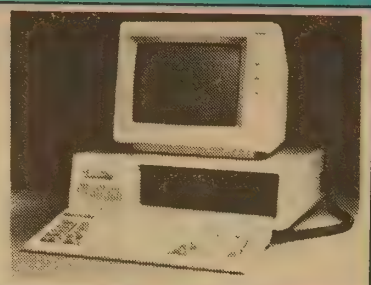

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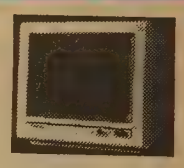

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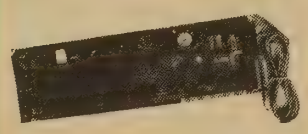

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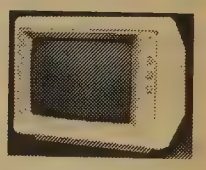

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916

The Vortex BBS. (916) 481-0194. 24 hours, 300/1200 baud. Online and RPG games, new ones start often. Message boards include private mail, Dr. Who, game hints, endless story, play by mail. Vote on movies and weekly survey. Articles and BBS listings. No Fee. Register first call. Pamela Lunsford, sysop.

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The Devil's Domain BBS. (916) 268-1127. 8-N-1, 24 hours, 300/1200/2400 baud. 4 sub-boards including main, music, jokes/war, and elite. Up/downloading. General files. Voting topics, online gaming. A BBS devoted to have fun! Sysop: Asmodeus.

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ASSOCIATIONS

Community Entrepreneurs Organization (CEO). Business networking group meets in nine chapters around the Bay Area. Share information on tech and non-tech business issues. Topics, brainstorming and a chance to meet others in business. Various week nights. Contact Dr. Crandall, P.O. Box 2781, San Rafael CA 94912, (415) 435-4461. Also new Bulletin Board, (415) 552-9070.

IEEE Computer Societies Committee on Artificial Intelligence and Expert Systems sponsors an open meeting the third Thursday of every month, 7-10 pm, at Foothill College. For more information please call the IEEE council office at (415) 327-6622.

Computer Professionals For Social Responsibility. P.O. Box 717, Palo Alto, CA 94301. (415) 322-3778.

Computer Professionals For Social Responsibility (East Bay). 902 Rose Ave., Piedmont, CA 94611. Contact Bruce Joffe, (415) 768-0288 days, (415) 654-5263 eves.

FOCUS-MED (Federation of Computer Users in Medicine). Open to all physicians and health professionals. Practice management consultant registry. (415) 626-4600.

FOCUS-DDS (Federation of Computer Users in Dentistry). Open to all dentists and dental professionals. Practice management consultant registry. (415) 626-4600.

ITRA Independent Technical Representative Association is an organization dedicated to helping people better understand the Personal Computer (IBM). Contact Tim Jones, 870 Market St. 609, San Francisco, CA 94102, (415) 421-4872 for meeting time and date.

MCTUG (formerly Marin County TRS-80 Users' Group). MS-DOS, CP/M and Tandy users group. Meets 7:30 pm on the first Monday of the month at the Larkspur Masonic Lodge, 1122 Magnolia Ave., Larkspur. Contact Dr. Frank Hovell, 907 Sprucewood Court, Petaluma, CA 94952, (707) 762-5740.

PRACSA (Public Remote Access Computer Standards Association) offers to clubs, schools, and user groups a Speakers Bureau. The purpose of the bureau is to act as a resource to these groups in obtaining speakers of high quality for their meetings. The volunteer speaker is provided free to the group. Contact (408) 262-5150. Meetings 4th Wednesday, 7 pm, Vadic Cafeteria, 222 Caspian Dr., Sunnyvale.

San Bruno Computer Core. Meets 7:30 pm alternate Wednesdays. Call (415) 952-9309 for address and info.

San Francisco Computer Society (Formerly the San Francisco First Osborne Group). A society for users of portable computers and/or the CP/M operating system. P.O. Box 783, San Francisco, CA 94101-0783. Meetings on fourth Thursday of the month, St. Aidan's Church, Diamond Heights and Goldmine Dr. in SF. All are invited. Dues $10/yr.

Software Entrepreneurs' Forum, PO Box 61031, Palo Alto, CA 94306. (415) 854-7219.

PATCA (Professional & Technical Consultants Association). 1330 S. Bascom Ave., Suite D, San Jose, CA 95128. (408) 287-8703.

BAYMUG. Bay Area Micro-Processor User Group. General computer group, mostly CP/M and S100. All types of interests welcome. Celebrating our 10th year of meetings! Meetings 1441 Rolins Rd., Burlingame, CA, 1st Thursday, 7:30 p.m. Contact Victor K. Bailey, P.O. Box 248, Pleasanton, CA. 94566. (415) 462-4442.

Byte Hum. A user group for computer buffs concerned with human needs, or social activists who want to learn about computers. Let's put all that knowledge to work for social transformation! Sponsored by the Humanist Party. Contact Rick Wall, (415) 495-6555 or (415) 337-2530.

Society for Technical Communication. STC is a professional organization dedicated to furthering the art of technical communication. The San Francisco chapter has about 200 members. Writers, artists and others interested in technical communications are welcome. Meetings 3rd Wednesday of every month, 5:30-7:00 pm; call Sarah Collings, (415) 383-9631 for info.

North Bay Users Group (NBUG). Family computer club devoted to all aspects of computing. Monthly newsletter, library, software demos, etc. Meetings at "CAVE" school, 2nd Tuesday of the month, 7:30-10 pm. Contact Gloria Hutchinson, P.O. Box 7116, Vallejo, CA 94590, or call (707) 644-9327.

Robotics Society of America. Dedicated to disseminating information about robotics, artificial intelligence and machine controls. Mailing address 36 Newell St., San Francisco, CA 94133, (415) 673-2376. San Francisco chapter meets 2nd Monday of the month, 8 pm, Homestead Savings 5757 Geary Blvd. Contact Jim Strope, (415) 552-6564. Berkeley branch meets 6:30 pm, last Wednesday of the month, Claremont Branch, Berkeley Library, Ashby and Benvenue. Contact Soren Knudson, (415) 843-2344. Sunnyvale Pongbotics meets in Sunnyvale on the De Anza College campus, Room 22, first three Wednesdays of the month, 7:30 pm. Contact Bill Lee, (408) 281-2252.

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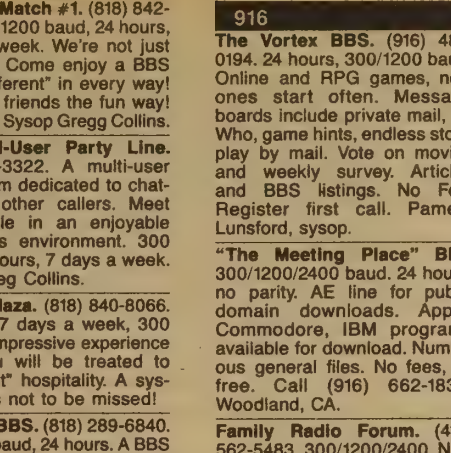

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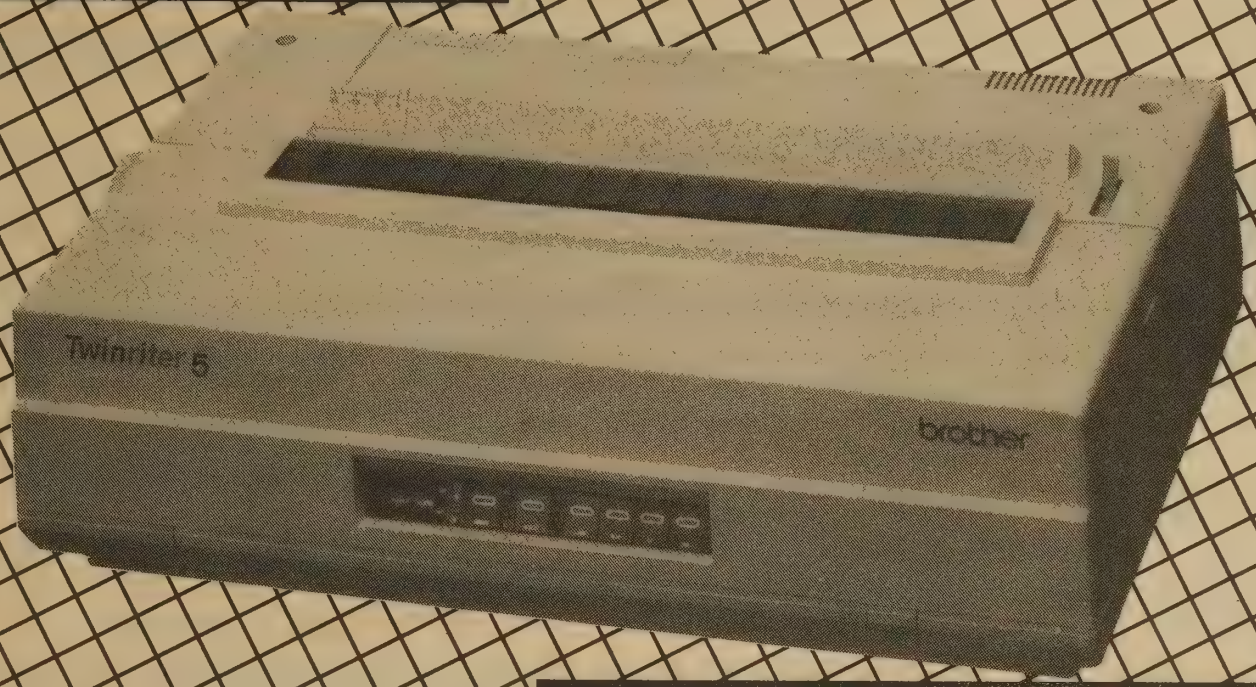


The Hybrid

Features:

- Daisy wheel printing
- Dot matrix printing
- 3K byte buffer (option . . . 11K or 19K byte)
- Six types of dot densities
- Super/subscript
- Auto underlining
- Bold printing
- Shadow printing
- Proportional spacing

Daisy Wheel Mode Specifications:

Print speed	35 CPS (3A Text, Elite pitch)
Print wheel	96 chrs/wheel
Print wheel life	10 million chrs/wheel

Cost Performance Plus

The dot matrix/daisy wheel capabilities of the TWINRITER 5 allow wide versatility that saves space, time and money.

1. Document produced on a word processor.
2. Printout in draft mode (dot).
3. Proofreading and review.
4. Corrections made on word processor.
5. Switch to letter quality mode (using control panel or computer command).
6. Printout in letter quality mode (daisy wheel).
7. Finished document.

Print Head

The secret behind the TWINRITER 5 is a dual head printing system that provides both daisy wheel and dot matrix capabilities. Switching between the two heads allows virtually unlimited versatility.

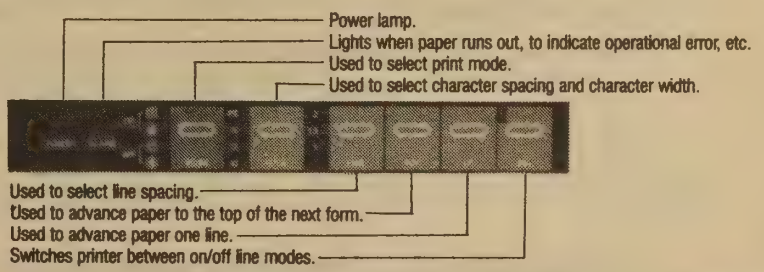
Dot Matrix Mode Specifications:

Print head	9-pin wire dot
Print speed	140 cps (max.)
Character configuration	
Draft mode	7x9 dot matrix
Near letter quality mode	24x24 dot matrix

The Brother Twinriter 5 printer has successfully passed compatibility testing with 1-2-3 Release 2, Symphony Release 1.1, and 1-2-3 Report Writer on an IBM PC-XT with PC-DOS 3.0. Installation of the Diablo 630 driver for text printing, and the Epson FX-80 driver for graphics printing is required.

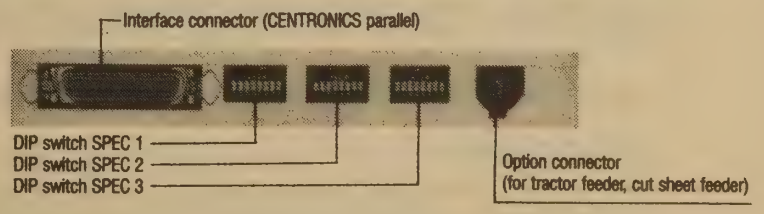
Control Panel

Controls and indicators of the TWINRITER 5 are conveniently located for centralized switching operations. The current status of the printer can be determined at a glance.


Power lamp.
Lights when paper runs out, to indicate operational error, etc.
Used to select print mode.
Used to select character spacing and character width.
Used to select line spacing.
Used to advance paper to the top of the next form.
Used to advance paper one line.
Switches printer between on/off line modes.

Interface Layout

The TWINRITER 5 comes equipped with a CENTRONICS parallel interface. An RS-232C interfacing is made possible using an optionally available convertor.


Interface connector (CENTRONICS parallel)
DIP switch SPEC 1
DIP switch SPEC 2
DIP switch SPEC 3
Option connector
(for tractor feeder, cut sheet feeder)

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NANAO Model 8060 the multi-scan frequency monitor for multi-scan graphics adapters. Model 8060 — the brighter and higher resolution flexible-scan color monitor.

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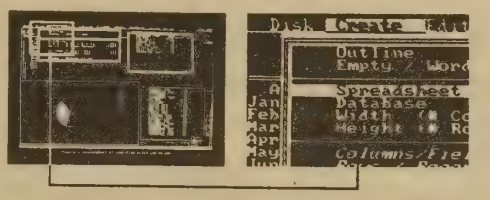
On the model 8060S, we provide a 14-inch (13"V), 0.28mm dot pitch high resolution CRT. It is the highest resolution CRT among different monitors for CGA, EGA and PGA. We also have the model 8060H, which has a 14-inch, 0.31mm dot pitch CRT, similar to other EGA-monitors and multi-scan system monitors. The reason we didn't stop there is that we know the capability of the newest graphics adapters for the IBM PC, XT and AT. Down loadable fonts is one of the most exciting features of these adapters, and they provide fonts of as small as 5x6 character box. In order to get the most out of your software, and take advantage of RAM fonts, try the model 8060 — you'll appreciate the difference.

SIZE Adjustment
4 points 10mm step Horizontal SIZE adjustment and stepless Vertical SIZE adjustment provide perfect H/V aspect ratio.

TEXT Mode
Characters are switched to Amber or White in every mode. White characters mixed with light original colors and intensity makes it easy to find important part of display.

SIGNAL Indicator
The power indicator lamp also indicates TTL signal mode with Orange light and ANALOG signal mode with Green



	NANAO model 8060S	NEC MULTISYNC	IBM PGD
CRT Trio pitch	0.28mm	0.31mm	0.31mm
Horizontal dots	820	800	640
Vertical lines	620	560	480

Specifications

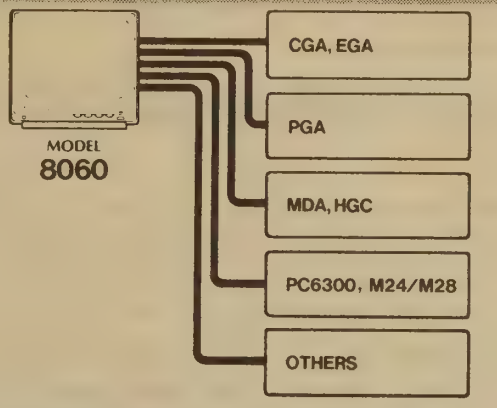
CRT Trio pitch	**0.28mm 8060S, 0.31mm 8060H***
Size	14 (13V) 90°
Face treatment	Dark face, Non-glare
Standard Display size	250mm x 167mm
Recommended Resolution	820 horizontal dots 620 vertical lines
Video Band Width	30MHz minimum
Dimensions(mm)	356(W) x 325(H) x 400(D)

Wide compatibility

Model 8060 is fully compatible with all standard Color Graphic Adapters from IBM. Scan frequency, number of colors, display size and position are automatically adjusted.
It also supports AT&T PC6300, OLIVETTI M24/M28 users with automatically adjusted full size display.

	NANAO model 8060	NEC MULTISYNC	IBM EGD	IBM PGD
PGA	●	●	—	●
EGA	●	●	●	—
CGA	●	●	●	—
MDA, HGC	●	●	—	—
AT & T PC 6300 OLIVETTI M24-M28	●	Proper display size not adjustable	—	—

Automatic scan frequency adjustment for horizontal and vertical frequencies. Both horizontal and vertical scan are automatically adjusted to those of display boards and computers. On NEC MULTISYNC, vertical sync. has to be manually adjusted.



COMPARISON BETWEEN NANAO FLEXSCAN (8060H) AND NEC MULTISYNC

Item	NANAO FLEXSCAN	NEC MULTISYNC
Scan frequency		
Horizontal	15.5KHz - 35KHz (auto)	15.5KHz - 35KHz (auto)
Vertical	50Hz - 80Hz (auto)	56Hz - 62Hz (manual)
Horizontal size adjust		
Position	Front	Top (under the Lid)
Number of steps	4 positions	2 positions
Range (EGA)	235mm - 265mm	245mm - 255mm
Range (AT&T PC6300)	242mm - 270mm (overscan)	195mm - 205mm
Vertical size adjust		
Position	Front	Top (under the Lid)
Range	135mm - Overscan	110mm - Overscan
Brightness (EGA		
High-white	95 ft-L	70 ft-L (115)
White	50 ft-L	20 ft-L (40)
Gray	30 ft-L	15 ft-L (35)
Test Mode Switch		
Available with	Any adapter (TTL/Analog)	EGA, CGA only
Intensified text	Yes	No
Switch position	Front	Back and Top
Dynamic raster regulation with EGA	No distortion due to the bright pattern	Distortion due to the bright pattern

*MODEL 8060H $555 *MODEL 8060S $595

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Created with dB-Man database development system from Versa-Soft, **Multi-Manager** is a menu based system, so you never need to memorize commands. There's even a built-in Help facility that refers you to the exact location in the Reference Manual to get more information about specific commands.

Here's **Multi-Manager's** main menu:

Invoice Manager	**Payroll Manager**
Vendor Manager	**Extended Manager**
Inventory Manager	**Super Manager**
System Manager	**Archive Manager**

Multi-Manager helps you manage four major aspects of your business: customer invoicing, vendor invoicing, payroll(employees), and inventory. You can use a computer system at the point-of-sales at every retail location to issue invoices, track inventory sold, and track employee hours and sales. Each sales record is coded with the employee's ID so you can get a tally of his or her sales for any time period, including a sales-per-hour average. If you also sell by mail order, the inventory list kept in any systems used in shipping can easily be coordinated with the one used at the point-of-sales.

The system can only be used by someone with proper password clearance. Each employee receives a password which he or she must enter before performing most of **Multi-Manager's** functions. There are nineteen different system functions for which each employee must be specifically cleared by you, the business owner--only you have this power.

When any business location receives new merchandise, use the Vendor Manager to enter the vendor invoice into the system, which automatically adds the newly received merchandise to the inventory database. When you need to transfer merchandise between two business locations, **Multi-Manager** automates the process fully with a floppy disk that's carried along with the transferred merchandise.

Multi-Manager's numerous report sections print out data you require for managing every aspect of your business. Most of **Multi-Manager's** reports let you set the period of time for the report (e.g. January through July 1987, June 1, 1987 through June 3, etc.).

Here are some of the report titles:

Sales Report
Employee Report
Employee Payroll Report
Inventory List
High Security Inventory List (includes your cost per item and totals your cost for inventory)
Transfer Report
Layaways Report
Returns Report
Vendor Invoices Report
Re-order List
Hot Mover List

Multi-Manager does all the calculation and paperwork so you can produce timely financial reports any time you need them.

Multi-Manager's special features aid tremendously in easing the burden of all "little" tasks your business requires to keep it running smoothly. For example, when you enter new inventory items you can enter a different re-order point for each. Then, whenever you like, **Multi-Manager** prints out a list off all inventory items that are at or below their re-order points.

The Hot Mover list prints a list of your best-selling items--top ten, twenty, or any other figure you like! You can discount an entire category of merchandise by a common percentage amount set by you. You can also Package Sales consisting of any combination of inventory items. Then when you sell such a package you need only enter one part number!

Last, but by no means least, if your business has multiple locations, you can keep a master inventory of all locations at a central Super Manager computer system. The Super Manager also helps you coordinate inventories for each remote location separately. The Super Manager uses the invoice information stored for every transaction in each system to determine whether a store's inventory list is accurate--a fool proof method for detection of inventory tampering.

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I.B.M. PC or Compatibles with disk drive and a hard disk.
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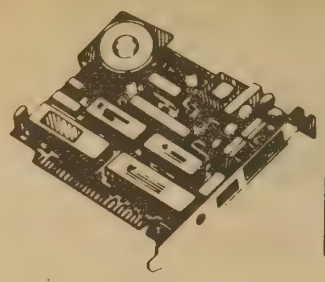

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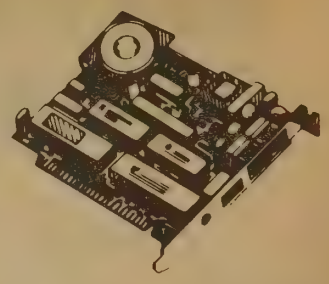

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Silicon Valley Computer Society. Meetings 7:30 pm, second Wednesday of the month, Duane and Britton SE corner, Sunnyvale. Contact Dick Verna, (408) 262-2679 for information.

PicoNet. A microcomputer users group. Meets on the second Thursday of each month at 7:30 pm at CMX Corp., 2230 Martin Ave., Santa Clara, CA. Formerly specialized in CP/M software, but has broadened its scope to encompass the entire field of computer-related high technology. Extensive library of CP/M pd software; preparing PC-DOS library. Monthly meetings, periodic newsletter, BBS, C language SIG. Call (408) 374-8090 for recorded message on next meeting's topic.

MicroPsy. Users group devoted to the application of microcomputers in the psychological fields. Meetings first Saturday of the month, noon. Call for information: Martin Schaaf, M.S., (415) 454-6761.

C Group of Northern California. Forming C programmer support group. Group's function will be to exchange information, discuss programming techniques and problems, etc. Anticipate monthly meetings at rotating locations. First meeting to be held 7:30 pm, Tuesday evening, November 4th, in Mill Valley. Call (415) 383-7006, or contact Ben T. Choate III, P.O. Box 1533, Mill Valley, CA 94942.

BADGE-Bay Area Developers Group. Meets third Thursday of every month, 7:30 pm, at Stanford University Building 200, Room 002. Contact Tom Rokicki or Bob Alverson, (415) 326-5312 for information.

California Genealogical Society Computer Interest Group. Meets second Saturday of the month, 300 Brannan St., 4th Floor, San Francisco. Call W.R. Shepard, (415) 989-5441 for information.

Hebrew Users Group., Supporting the use of Hebrew and Hebrew-based languages on computers. Contact Jack Love, (415) 845-7793 (Berkeley Hillel).

Gay/Lesbian PC Users Group. We meet on the second Sunday of each month. This is the group where we show our hardware and software and share our knowledge. All levels of users are welcome. Meeting place is the MCC San Francisco, 150 Eureka Street. For more info, contact Jim at P.O. Box 42429, San Francisco, CA 94101, (415) 334-9761.

NATIONAL/ INTERNATIONAL

Network Users Association. 2111 Eisenhower Ave., Suite 400, Alexandria, VA 22314. (800) 638-8510 or (703) 683-8500.

TPUG World's largest Commodore Users Group. $25 annual membership entitles you to access to library of public domain software for C-64, VIC 20, PET, CBM, SuperPET, B-128. Coming soon Plus 4, C-16, C-128. New disks added each month. Also TPUG Magazine (10 per year), free access to TPUG's Bulletin Board Modem System, 24 hours, 7 days. TPUG Inc., 5300 Young St., Willowdale, Ontario, Canada M2N5R2, (416) 733-2933.

Apple Co-op. 290 SW 43rd, Renton, WA 98055. (201) 251-5222.

JUG (Jefferson State Computer Users Group). Many SIGs, newsletter. Dues $5.00 year, some SIGs additional. Contact JUG, P.O. Box 457, Gold Hill, OR 97525-0457.

MicroPro Users Group of America. National group with over 200 members worldwide. Dedicated to supporting MicroPro products, especially WordStar and InfoStar, for any hardware. c/o Procyon Associates, 140 Riverside Drive, New York, NY 10024. (212) 595-4811.

Golden Apple Club, Apple II and Macintosh. Contact Stefano Minotto, Golden Apple Club, Riviera Tiso da Camposanpiero, 26, 35100 Padua, Italy.

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Getec s.r.l. Contact Silvio Esengrini, Via dei Guarneri Nr. 24,-20141 Milan, Italy. Phone: 39/2/5696502, 39/21 5694185.

Italtel S.p.a. Contact Michelangello Sala, C.Na, Castelletto, 20090 Settimo Milanese, Milan, Italy. Phone 39-2-4388-4288.

PLUG (The Plus/4 Users' Group). Dedicated solely to support of the Commodore Plus/4. No regular meetings, 200 members in US, Canada, Mexico, and Europe. Newsletter, public domain software library. P.O. Box 1001, Monterey, CA 93942.

KAPPA (Memphis Kaypro Users Group). Meetings at 2 pm, 1st Saturday of the month, Room 2, Jennings Hall. Contact Hugh Lamar, 5983 Macon Cove, Memphis, TN. (901) 377-4140.

The AppleWorks Users Group (TAWUG). c/o Regional Rep, 27421 Berenda Way, Hayward, CA 94544, (415) 887-7499.

FORTH Interest Group, International Office. P.O. Box 8231, San Jose, CA 95155. For further information call (408) 277-0668.

Apricot User Group (APRICUG). Box 98, Malverne, NY 11565.

Spellbinder Users' Group has an international newsletter with useful macros written by members, advice on new applications, news, and word-processing problem solving. All experience levels. California members welcome. Write P.O. Box 14, Newark, Notts, England NG24 4TP; telephone (0636) 77313; telecom Gold/Dialcom Mailbox 72: MAG95610.

AstroSoft for the IBM PC. Promotes the use of software in astronomy; disseminates astronomical information. P.O. Box 4451, Hayward, CA 94540-4451. (415) 278-8458.

National TeleVideo Users Group. Meets 7:30 pm, 3rd Thursday, 1170 Morse Ave., Sunnyvale. P.O. Box 22007, San Francisco, CA 94122. Call for info—David, (415) 753-1552.

Apple Fontrix Club. Monthly newsletter. P.O. Box 29857, Thornton, CO 80229-0857.

N.A.B.V.I.C.U. - The National Association of Blind and Visually Impaired Computer Users. The purpose of this group is to gather information that will assist the blind or visually impaired person in utilizing the enromous potential of computers. It supports **CompuHelp**, a menu driven database-bulletin board programmed for use by the blind and visually impaired. It is available 24 hours a day, 7-days a week, 300/1200 baud, 8 or 7 bits, even or no parity, 1 stop bit. (916) 786-3923. Compuhelp is also available on disks. For more info, contact Otto C. Haiungs, Chief Executive Officer, Sysop, at P.O. Box 1352, Roseville, CA 95661-1352. (916) 783-0364.

28 Barbary Lane. Meets at 121 13th Ave. East, Seattle, WA, Fridays 8:00 pm. Contact A. Madrigal, (206) 323-2828. BBS: (206) 323-2828.

Microenvironmental Information Consortium For Researchers Overseas. World Headquarters, 712 Avery Rd. W. Winlock, Washington 98596, USA. Washington phone: (206) 262-0159. California phone: (415) 524-9309. Micro on MCI mail, ECONET & WELL TELEX number 6502928733 via WUI.

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Everex 60M INT/EXT Tape Backup $729/819
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AN ANNOUNCEMENT FROM

California's Computer Magazine
MICROTIMES

Due to the 4th of July holiday, August 1987 Northern MicroTimes (Issue #37) will have the following revised deadlines:

Space confirmation and non camera ready deadline: Tuesday, June 23

Camera ready deadline: Tuesday, June 30

Cover date: August 1987 **Street date:** July 10, 1987

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DB005	Dbase3 Clone With 295K DOC (2)	**L002**	Basic Tutor
DB003	Dbase3 Tools-Code Analyzer+	**LP001**	Pascal Tutor
U010	Mail List Manager	**M001**	ProComm 2.42 (2) Comm Program
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What's Happening?

Check the MicroTimes Calendar of Events in this issue for computer-related classes, seminars, and shows in your area.

USER GROUPS

APL

APLBUG (APL Bay Area Users' Group) has monthly meetings and a newsletter for people interested in APL (A Programming Language). It meets the third Monday of each month at 7:30 pm in the offices of I.P. Sharp Associates, 220 California Avenue, Palo Alto. Annual dues are $15. Contact Curtis Jones, (408) 292-4060, for information.

AT&T

Bay Area AT&T PC6300 Users' Group. Official group supported by AT&T. Meeting time and location vary. Contact Victor A. Borromeo, 764 St. Francis Blvd., Daly City, CA 94015. (415) 477-8124 days, (415) 991-4164 eves/weekends, or Maurice Aranda, (415) 972-5436 for information. BBS (415) 652-8277, 1200/2400, 8-N-1, 24 hours, 7 days.

ACTRIX

ACTRIX Computer Enthusiast Society. Membership ($20/yr) provides public domain software, group rates, discounts for owners of Actrix/Access Matrix microcomputers. Meetings at Sunnyvale Community Center, last Wednesday of the month, 7 pm. Contact K. Edward Lynch, 1405 Phelps Ave. #29, San Jose 95117, (408) 756-5104, for more information.

ADAM

Coleco Adam Users Group. For info send SASE to: CAUG, 2316 Stuart St., Berkeley, CA 94705. Voice (415) 549-3437, data (415) 549-3378.

South Bay ADAM Users' Group. Now forming a users' group exclusively for the ADAM enthusiast in the south bay area. Call Steve for more info at (408) 253-4190.

East Bay ADAM Group. Forming an ADAM users group in the East Bay area. Call Tom for more information — (415) 886-2884, or write 6097 Slopeview Ct., Castro Valley, CA 94552.

AMIGA

First Amiga User Group. We offer demonstrations of software and hardware, a public domain library, and general user help at our monthly meetings, which are held on the first Tuesday of each month in Belmont, CA. Meeting address 1300 Fifth Ave., Belmont, CA, 94070, 7 pm, first Tuesday of the month. Contact Tim Avery/Kayvan Pejooh, (415) 595-5452.

First Amiga User Group the South Bay. End-users, enthusiasts, developers and programmers all welcome. Meetings 2nd Fridays, library, 40 N. Milpitas Blvd., Milpitas, 7-9 pm. Contact Jim Thomas, P.O. 1863, Fremont, CA 94538, (415) 651-0201. BBS (415) 659-9169.

ACCESS. The Amiga and Commodore Computer EnthusiastS Society (ACCESS) holds its meetings on the 3rd Wednesday of the month in Room 107 of the Chabot Building in Hacienda Business Park, Pleasanton, CA. Contact Skip Perkins, (415) 443-4778 for information.

Sacramento Amiga Computer Club (SACC). Meets the second Wednesday of each month at the Sacramento Municipal Utility District (SMUD) auditorium, 6201 S. St. just off Hwy 50 at the 59th or 65th St. exit, 7 pm. For more information call George Leone, president, at (916) 944-7400 or write to SACC, P.O. Box 19784, Sacramento CA 95819-0784.

Amiga East Bay Info Exchange (AEBIE). P.O. Box 485, Pinole, CA 94564. For end users in the West County, North and/or East Bay area.

AD-Amiga Developers Group. Meets the last Monday of each month at 6 pm, 2618 Telegraph Ave., Berkeley, (415) 845-4814.

AEBUG-Amiga East Bay User Group. The Original Users Group meets the second Wednesday of each month at 2618 Telegraph Ave., Berkeley, 7 pm. (415) 845-4814 for information; BBS (415) 845-4812.

AUGment, the Amiga User's Group of Silicon Valley. P.O. Box 1863, Fremont, CA 94538-0186. Contact: Jim Thomas. Information line: (415) 651-1160. BBS: (415) 659-9169. Meetings every second Friday at Hewlett-Packard, 5301 Stevens Creek Blvd., Cupertino.

Amiga Addicts Anonymous. Meets the third Monday of each month, 7:30 pm, at 1331 Concord Ave., Concord (CCC Water District) CA. For more into, contact Jeff Chase, president, P.O. Box 4669, Walnut Creek, CA 94596. (415) 933-0217. BBS: (415) 283-5469.

AUM-Amiga Users of Marin. Meets the third Wednesday of each month, 7:30, at the College of Marin, Science Center, #190, Kentfield, CA. For more info, contact Bob Galvan, 119 Willow, Corte Madera, CA 94925. (415) 924-5384.

APPLE

San Francisco Apple Core Special Interest Groups, BBS, large public domain software library, newsletter, help network. For meeting and current events information, call (415) 771-5830. Recorded message 24 hours, live person sometimes during business hours. Leave name and address to receive information. Draconet BBS (415) 781-6645 modem line.

The AppleWorks Users Group. c/o TAWUG Regional Rep., 27421 Berenda Way, Hayward, CA 94544.

SPCA (Society For The Prevention of Cruelty To Apples) Apple user/interest group. Features: Monthly meeting with newsletter, raffle and door prize hard / software, demonstrations, lectures, discussions, $20 per year, pro-rated after June. Meetings last Wednesday of month, 7:30 pm. Contact Paul Meyerholtz for info (415) 490-8209.

Association of Apple 32 Users Macintosh, Lisa. An association of "knowledge workers" who wish to share information on products, applications, and events. User-developed, noncopyrighted software, SIGS, newsletter. P.O. Box 634, Santa Clara, CA 95052.

San Leandro Apple Eaters Users Group. Apple II users group meets the first Thursday of each month at San Leandro High School (room 213). New owners to experienced users welcome: Appleworks, education, hardware/software, telecommunications. Call Open Campus BBS area 11 (415-895-0135) or voice (415-782-9250) for more information.

Pen-Apple (Peninsula Apple Users Group) Meetings 2nd Thursday each month at 7:30 pm, Ampex Corporation cafeteria, 421 Broadway, Redwood City. Contact Pierre Testart, (415) 952-9309.

Diablo Valley Apple Users. Apple II family users and Macintosh users. Special Interest Groups meet monthly. Featuring a library of public domain software collection and our own Club's DOM's, monthly newsletter, group buys of hardware and software as well as monthly demos of new products. Meetings held on 1st and 3rd Friday each month at 7 pm at the Willow Creek Center, 1026 Mohr Lane in Concord. Contact Merle Zmak, president, P.O. Box 5031 Concord, CA 94524, or call (415) 672-7596 for additional information.

South Peninsula Apple Computer Enthusiasts (c/o David Harris, P.O. Box 1257, Palo Alto, CA 94302) meets near the Varian Credit Union, Bldg. 4C, 611 Hansen Way, Palo Alto, at 7:30 pm on the first Tuesday of every month to exchange information about available hardware, software, events, publications, and methods on Apples, and to encourage collaboration on projects. Call (415) 856-9126 answering machine takes 30-second messages.

Roseville Apple Core. Discover your Apple's Core! We meet on the second Wednesday and fourth Tuesday of each month, 7:00, at SMUD Foothills Bldg., Training Room D, at Don Julio and Elkhorn. There are additional SIG meetings for AppleWorks, BASIC, Telcom and Macintosh. We also feature a monthly bulletin, large public domain library, and new member's disk, all for just $12 yearly membership. C'mon out and bring a friend. For more info, contact Bruce McLeod, president, P.O. Box 1377, Roseville, CA 94551. (916) 723-6422.

Apple Sac. (Sacramento) Meetings on first Wednesday and third Tuesday every month at Madison School, 5241 Harrison St. (corner Harrison and Madison Ave. 1/4 mile west of 180 on Madison Ave.), 7:30 pm. Contact Ray Beam, president, P.O. Box 254645, Sacramento, CA 95825, (916) 448-6115 for more information.

Stanislaus Apple Group. You're invited! Stanislaus Apple Group meets 2nd Tuesday each month, 7 pm, Room 124 Ag Bldg, Modesto JC, main campus. We support Apple II and compatibles, Apple III, Mac, Lisa. Newsletter, BBS (209-529-3202), extensive PD software library. More info call (209) 523-7289 (eves).

Santa Cruz Apple User's Group meets at Cabrillo College, Aptos, ILC building, 1:30 pm, second Sunday of the month. For information contact Tim Ruckle, president, (408) 462-3154.

Apple Gardens. New Apple II users group. Share info, programs, group purchases. Brand name disk, new products, software demos and evaluations. Call Tom Turley at (415) 468-4045.

Apple P.I.E. Meets at Lynbrook High School, Room 30, 1280 Johnson Ave., San Jose, 4th Thursdays, 7:30 pm. Contact George Ingalls, P.O. Box 2185, Santa Clara, CA 95055.

ATUNC-Apple Three Users of Northern California. Explanations, demos, large public domain library. Mailing address: 220 Redwood Highway 184, Mill Valley, CA 94941. On Apex and Draconet BBSs.

Apple East Bay Users. Meets the first Tuesday of each month at 2618 Telegraph Avenue, Berkeley, at 7 pm. (415) 845-4814 for information; BBS (415) 845-4812.

Apple Pickers of Sonoma County. Meets second Saturday of each month, 1735 Shuhaw Hall, SRJC, 1 pm. Call for sample newsletter: Mary Lou Mayes, (707) 763-8322.

TVAUG-Tri Valley Apple User's Group. Meets on the first Thursday of each month, 6:30 at 7079 Commerce Circle, Pleasanton, near the intersection of Hwys. 580 and 680, to discuss our Apple IIs. A special beginners group meets on the second Thursday of each month. For more info, contact Dan Balsley or Esther Farnstrom, 9814 Davona Drive, San Ramon, CA 94583. (415) 828-6237 or (415) 829-3672.

Apple Blossom User Group. Meets 1st and 3rd Wednesday of each month at 7 pm at 290 International Circle, San Jose CA 95119. All Apple users welcome. Apple II, II+, IIc, IIe, III and Macintosh. No matter which Apple you have we have a group for you. Contact Ray Enochs, P.O. Box 53323, San Jose CA 95153. (408) 723-9141. ABUG BBS (408) 227-3993.

ASHTON-TATE

Framework/Editor Bay Area Users Group (FREDBUG) Purpose of the group is to share programming and applications techniques under FRAMEWORK for the business and technical professional. Call for info: Rudi Wiedemann, (408) 730-4159.

San Francisco dBase User Group For advanced users and programmers. Meets once per month. Membership required for attendance. Contact Frank A. De Coster, 1100 Gough St., San Francisco, CA 94109, (415) 474-6693.

East Bay dBASE Users Group. Meets 3rd Sunday, 1 pm. Call Darrell Bross (415)873-7522 or Alexandra Saur (415)893-7637 for meeting address.

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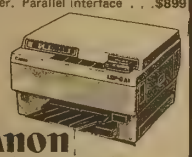

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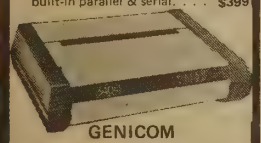

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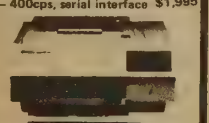

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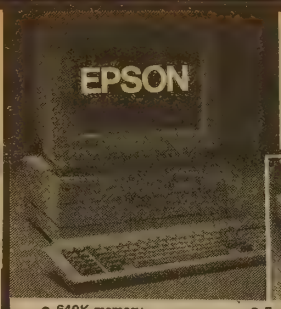

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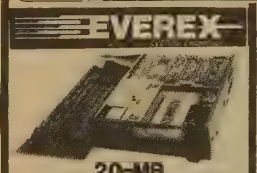

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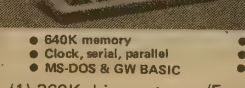

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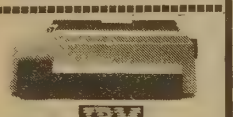

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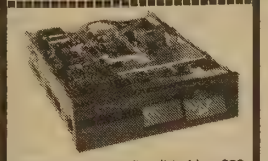

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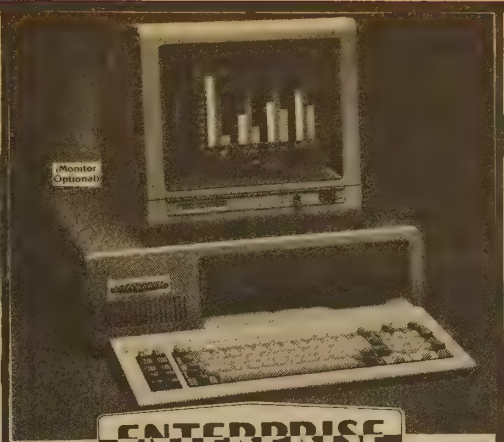

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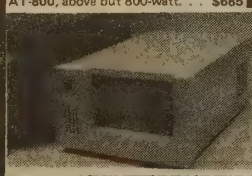

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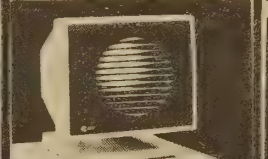

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IBM-8512, 14" RGB monitor . . .$Call
IBM-8513, 12" EGA monitor . . .$Call
IBM-8514, 16" PGA monitor . . .$Call
IBM RGB Color Monitor. $545
IBM Enhanced RGB Monitor . . .$689
MultiTech 14" EGA monitor . . .$425
Mitsubishi XC-1410C, 14" EGA Color. Similar to Compaq EGA . . .$485
NEC Multi-sync RGB monitor -$599
Quimax PX-IV — 13" RGB, 720x240 line. Has green switch, tilt & swivel base $445
SONY KV-1311CR — RGB Color Monitor, 680-line resolution, also a Trinitron Color TV with remote control . . .*A Fantastic Buy* $425
SONY SPD1302, 13" EGA Multisyn monitor w/900-line resolution.$625
Tatung 1360 — 13" RGB monitor$355
Tatung 1380 — 13" EGA monitor$399
Taxan 720 RGB Monitor. $379
Taxan 635 RGB Monitor. $449
Taxan 650 RGB Monitor. $515
Taxan 760 EGA Monitor. $525
Taxan 770 Multisyn monitor . . .$575
Thompson 14" RGB Color monitor w/ green & amber switch. $325

★★★ GREEN SCREEN ★★★

IBM Monochrome, 12", 720-dot .$255
Quimax DM-14G — 13" green TTL, 750x350 resolution, tilt& swivel base included. 1 yr. warranty .$155
Samsung 12" TTL green monitor. $95
Samsung SF39A7, 12" flat screen TTL Green monitor w/swivel base .$105
Taxan 121, 12" green, 1000x360 dots, TTL monochrome $145

★★★ AMBER SCREEN ★★★

Amdek 310A, 12" amber. $169
Princeton MAX-12, 12" amber. .$169
Quimax DM-14A — 13" amber TTL, 750x350 resolution. Tilt & swivel base included. 1 yr warranty. $159
Sansung 12" TTL amber monitor. $99
Samsung SM12SFLAA7,12" flat screen TTL Amber monitor w/base. .$109
Taxan 122, 12" amber, 1000x360 dots, TTL monochrome . . . . . |$149

★★★ BLACK & WHITE ★★★

IBM-8503 — 12" B/W with base .$Call
Roland MB-142, 14" reversible black & white TTLmonochrome monitor w/ super hi res. 720x350 dots. . $269

TOSHIBA LAP-TOP

T1100-PLUS — Two 720K drives, LCD screen, battery operated . . $$Call
T3100 — One 720K drive, 10-MB hard disk, 640K, amber plasma screen. It is a lap-top AT, 115 volt AC.$$Call
Toshiba 5¼" external drive for 1100+ and 3100 only. $445
Toshiba 3½" internal drive for PC $199
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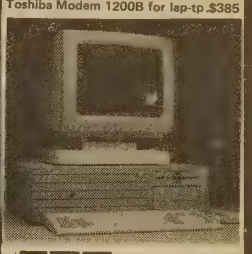

ITT EXTRA/286

10-MHz AT compatible, 640K, 1.2-MB drive also read & write 360K format. 8 expansion slots. Complete with EGA & keyboard $1,795
ITT amber or green monitor . . . $175

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PC-25 Copier — Make copies up to legal size from original as big as 10x 14. Enlarge 120%, reduce 67% or 78%. . . . . ($1,395) $799
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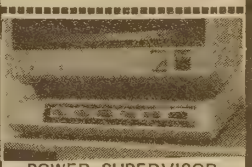
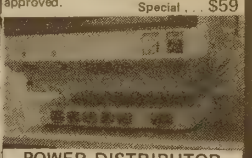
Blue, brown, red cartridge $80



POWER SUPERVISOR

A power center with surge protector & noise EMI filter. It allows fingertip control of 5 different devices. UL approved. Special . . . $59



POWER DISTRIBUTOR

A power center with surge protector, noise EMI filter. 5 lighted rocker switches and a master switch. Built-in tilt & swivel monitor base. UL listed. Super special $69

The POWER DIRECTORS

P-22 — A unique control center & surge protector w/4 lighted and a master switches for computer, printer and accessories. It also filters out EMI & RFI interferences $79
P-2 — like P-22 but w/5 switches .$109
P-12 —Has 6 switches & clock . . .$149

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dBase II/III SIG of SF PC Users Group meets third Monday of each month, 7-8 pm, Fort Mason, San Francisco. Contact Ron Freshman, (415) 459-6613.

DBDVLPRS (dBaseIII Program Developers). Call for information on meeting time and location: Gil Orlik, (415) 931-0377, 2240 Buchanan St., SF 94115.

ATARI

ABACUS (Atari Bay Area Computer Users Society) All ATARI users or prospective users are welcome. Membership ($15/year) provides public domain software, low cost blank disks, monthly newsletter, group prices on hardware and software, help from experts, low cost classes for beginners. Meetings first Saturday of the month, Fort Mason, SF, Room 300, Bldg. C, 10 am-2 pm. Contact Bill Zinn, P.O. Box 1823, Mill Valley, CA 94941. (415) 753-8483.

A.C.M.E. (Atari Computer Marin Enthusiasts) Meets monthly in Marin, third Thursday evening monthly from 7 pm on. Gallinas School, 177 N. San Pedro Rd., San Rafael. Contact Bruce Frank, (415) 435-6020, P.O. Box 222, Tiburon, CA 94920.

Diablo Valley Atari Computer Enthusiasts (D.A.C.E.) Contact Mike Randis, 3602 Dumbarton St., Concord, CA 94519, (415) 798-6565.

Bay Area Atari Users Group We have a 24-hour 300/1200 baud BBS at (408) 249-7722. Meetings at Bracher School Cafeteria, corner of Bowers and Chromite, Santa Clara, CA, first Monday of the month. Contact Frank Nagle, P.O. Box 50459, Palo Alto, CA 94303, (415) 791-5461 for more info.

San Leandro Computer Club Although open to all computer users, this group is primarily oriented to Atari computer owners. Our club is considered one of the best in the country, worthy of consideration by both novices and experts. Meetings 1st Tuesday of the month at San Leandro Community Library, 300 Estudillo Ave., San Leandro, CA. Contact Phil Mitchell, P.O. Box 1525, San Leandro, CA 94577-0152 for more info, or call (415) 351-2208.

COAST User Group (California Original Atari ST). Public domain disks, MIDI, support, newsletter, help for the Atari ST line of computers. Advice and programs not to miss. Meetings on the 3rd Wednesday of each month, at The Berkeley Conference Center, 2105 Bancroft in Berkeley, CA, 7:00 pm, 6:30 for beginners. $1.00 admission for non-members. EaST COAST meets 2nd Tuesday of the month at 1015 Esther Drive, Pleasant Hill, 7:30 pm. Members only. Dues $30.00 yr. Contact Chuck Thorp, president, 1015 Esther Drive, Pleasant Hill, CA 94523, (415) 945-1949 for information.

Redwood Atari Group (R.A.G.) Meets 4th Saturday, 1-4 pm, at Coddingtown Meeting Room, 1100-B Coddingtown Center, Santa Rosa. Contact Mikkel Lawrence, (707)585-3949, 21 Creekwood Sq., Rohnert Park 94928.

ATTACHE

Attache UNL Otrona may be dead, but the Attache Users News Letter Lives ON!! Contact Jim Ayers, 301 Poplar St., Mill Valley, CA 94941. (415) 388-4805. Meetings 7:30 pm, 2nd Wednesday.

First Attache User Group News. Support, news, and cooperation for users of Otrona Attache and 2001 portable computers. Since '82. Contact Charles Raisch, 1827 Haight St. Suite 16, San Francisco, Ca 94117, (415) 221-3415.

AUTOCAD

AutoCAD Users Group. Call Gen Katz (415) 530-8870 for information about future meetings.

AutoCAD User Group. Call Volker Ackermann, (415) 485-0958 for information.

AutoCAD Users Group of Santa Cruz. Meetings held at Citicorp conference room, 806 Ocean Street, Santa Cruz, 7-9 pm, 1st and 3rd Tuesday of the month. Call (408) 462-0448 for information.

BASIS

Bay BUG Basis 108 Users meet every first Friday of the month at College of Alameda Computer Room, 7:30 pm. Contact Roger Bernhardt, 536 Mission, San Francisco or call (415) 221-0262 for more information.

BONDWELL

Bondwell Users Unite! Trying to start group, need your help. All levels welcome. Meeting address 405 Stierlin Rd. #17, Mountain View. Time and date to be announced. Call Tom Gatlin at (415) 961-0450 for more information.

BPI

Bay Area BPI Users Group meets the fourth Tuesday of each month. For more information contact Mitch Paioff, 5097 Tisdale Way, San Jose, CA 95130, (408) 866-4310.

CANNON

Cannon AS 100. Anyone who owns a Cannon AS-100 computer and is interested in forming a group to share problems and solutions write HTF-4111 Hilltop, Vacaville, CA 95688.

CASIO

Casio Research Project. Discussion and collaboration; creation of plug-in expansion board using VLSI chip. Share programs. Meetings TBA. Contact Julius M. Zebrowski, (415) 969-9458.

COMMODORE

San Francisco Commodore Users Group (SFCUG). Meets the last Thursday of each month at the Embarcadero YMCA near Steuart and Howard. All Commodore computer enthusiasts welcome. PD library, classes, in-depth demonstration, eprom programmer, BBS-ET (415) 861-4485. Contact Malcolm Lowe, (415) 832-1539.

Diablo Valley Commodore Users Group Meetings Contra Costa Water District Auditorium, 1331 Concord Ave., Concord, CA, second Thursday of month at 7:30 pm. Write DVCUG, P.O. Box 27155, Concord, CA 94527, or call (415) 838-2838 for more info.

Napa Valley Commodore Computer Club Meets first and third Mondays, 7:30 pm, at Northwood Elementary School, 2214 Berk St., Napa. Take Redwood Road to Dover St. to Berk St. Contact President Dick Bull (707) 257-3773 or vice-president Roger Pruym (707) 253-1690 for more info.

Lake County Commodore Users Group Contact Al Reuss, P.O. Box 388, Clearlake, CA 95422.

Marin Commodore Club Meets at Redwood High School, Corte Madera. Visitors welcome. Contact Elmer Johnson for information: 665 Las Colindas, San Rafael, (415) 479-0426.

Peninsula Commodore User Group Public domain library, demonstrations, user help, newsletter. Membership is $25 per year. Non-members pay $2 at door. Meetings are 3rd Tuesday of each month. Meeting place is the Church of the Good Shepherd Hall, 1300 5th Ave., Belmont (across from city hall). For more info call (415) 595-5452 between 9 am and 6 pm, or call our BBS at the same number after 6 pm.

The Commodore Connection User Group. (CCUG) Meetings at Homestead Savings, 14th and "A" St., Antioch, 3rd Monday of the month, 7:30 pm. Contact Walt Moxely, 2229 Santa Maria Drive, Pittsburg, CA 94565. (415) 458-3318. BBS: (415) 458-1005, Commodore only, 24 hours, 300/1200.

Commodore User's Group of Hayward. The CUG of Hayward meets the first Saturday of each month from 3 to 5 pm at the Commodore Computer Center located at 22521 2nd St., Hayward. Call (415) 886-1916 evenings between 5 - 8 pm or (415) 537-1323 days between 10 am and 5 pm.

NBUG (North Bay Users Group). Contact Jim Stephens, president, 124 Delgado St., Vallejo, CA 94591, or write P.O. Box 7116, Vallejo, CA 94590.

Santa Rosa Commodore Users Group. Walter Saures, President, 333 East Robles Ave., Santa Rosa, CA 95407-7921. (707) 584-7009. Information line, (707) 526-6464 SRCUG-BBS.

Family Roots Searchers. Using Commodore SX-64 computer, Dynax DX-15, PractCalc II, Word Pro 3 Plus, Family Tree. Meetings by appointment only. Vera Ross, Atchison Village, Richmond, CA 94801-2942, (415) 235-8716.

PLUG (The Plus/4 Users' Group). Dedicated solely to support of the Commodore Plus/4. No regular meetings, 200 members in US, Canada, Mexico, and Europe. Newsletter, public domain software library. P.O. Box 1001, Monterey, CA 93942.

Silicon Valley Commodore Computer Club. Meets 4th Wednesdays, H.P., 5301 Stevens Creek Blvd. at Lawrence, 7 pm. Contact Roger Weiss, (408) 942-2442.

ACCESS. The Amiga and Commodore Computer EnthusiastS Society (ACCESS) holds its meetings on the 3rd Wednesday of the month in Room 107 of the Chabot Building in Hacienda Business Park, Pleasanton, CA. Contact Skip Perkins, (415) 443-4778 for information.

C.O.W. Commodore Owners Workshop. Meets at the San Bruno Rec Center (in San Bruno Park) the third Thursday of every month from 7-10 pm. Machines welcome. We have a huge PD library that users can check out. We usually have demos each meeting; we have BASIC programming classes and help each other along. For further information call the San Bruno Parks and Rec at (415) 588-1201.

Fairfield Commodore User Group. Meetings Solano County Education Bldg., 1st and 3rd Mondays. Contact Ben Harris, 1182 Dana Dr. Fairfield 94533, (707) 422-1669.

FUNHUG — Fremont, Union City, Newark, Hayward Users Group. For users of Commodore 64, 128, and Amiga computers. We have software/hardware reviews and demos, plus open discussion time. We have over 90 disks in our library. Bring $2 to help pay for the meeting place. Group meets every third Wednesday at 7:45 at 5445 Central Ave., Newark. For more info and a map send SASE to Russ Fisher, 36015 Pizarro Dr., Fremont, CA 94536.

64/MORE, San Jose Chapter. Meets the first Sunday of each month from 6 pm to 9 pm at Mercury Savings and Loan, 859 Blossom Hill Road, San Jose. For further information call (408) 945-4327 or Night Owl BBS (408) 253-2295.

64/MORE, North Valley Chapter. Meets the second Saturday of each month from 10 am to noon at the Milpitas Public Library, 40 Milpitas Boulevard, Milpitas. For information call (408) 945-4327 or Night Owl BBS (408) 253-2295.

64/MORE, Cupertino Chapter. Meets the third Saturday of each month from 3 pm to 6 pm at the Saratoga Public Library, 13650 Saratoga Avenue, Saratoga. For further information call (408) 945-4327 or Night Owl BBS (408) 253-2295.

64/MORE, Campbell Chapter. Meets the fourth Tuesday of each month from 6:30 pm to 9:30 pm at the Santa Clara County Public Health Building, 2220 Moorpark Avenue, San Jose. For further information call (408) 945-4327 or Night Owl BBS (408) 253-2295.

COMPAQ

SF Compaq Users Group is now a SIG of the SF IBM PC Users Group. For information please call D. Blow at (415) 221-2764.

COMPUPRO

Berkeley Compupro. Berkeley Compupro User Group meets 4th Thursday every other month. Company Reps attend meetings. For more information call Barry at (415) 554-4733.

Hayward Compupro Users Group. Meets 3rd Saturday of every month in Hayward, California. Sponsored by Automation Sciences International. Meetings held at 22532 Foothill Blvd., Hayward, between 'B' and 'A' Streets. You may call (voice) (415) 886-2980 or (modem) (415) 886-4734. The CP/M Connection for further information." Topics include: hardware & software problem identification and solution, upgrades, new products, CP/M, CCP/M, ZCPR and getting the most out of application software. Other users and interested parties are welcome. Group founder: Michael D. Lipshutz.

DATAFLEX

Dataflex User Group. For more information call Alex at (415) 433-7944.

DEC

Silicon Valley DEC PC Users Group. Meets 2nd Wednesdays 7–9 pm at Kierulff Systems 1180 Murphy Avenue, San Jose. Contact Gary Catalano (408) 275-1133.

DYNABYTE

Dynabyte Announcing M.A.D., Mutual Assistance, Dynabyters (Dinosaurians?) For owners of this orphan Z80 S100 machine. Call Woody McPheeters, (415) 548-3126 or write 3128 King St., Berkeley, CA 94703.

EAGLE

Eagle Computer Users Group. P.O. Box 3381, Saratoga, CA 95070, (408) 972-1965. General meetings are held on the second Saturday of the month at Tandem Computer H.R. Training Room at 10300 N. Tantau Ave., Cupertino, from 9:30 am to 12:00 noon.

Screaming Eagles User Group For 8 and 16 bit Eagles. Quarterly newsletter, public domain disk. On CompuServe (CLUB) Sec. 3. $10/year individual, $20/year business. 101 Parnassus #1, San Francisco, CA 94117. (Voice) (415) 661-4362.

Eagle Computer Users Group —ECUG. Meets 2nd Mondays, 7 pm, 6132—66th Ave. (Southgate Library), Sacramento. Contact W. Jud Boies, P.O. Box 163506, Sacramento, CA 95816, (916) 443-1060.

ENABLE

ENABLE Users' Group. Supporting users of Enable, the integrated software package. Monthly meetings in San Francisco (contact Evan Christensen, 415/469-1863) and Walnut Creek (contact Sandi Baker, 415/944-0426).

EPSON

Bay Area Epson Salts 125 Del Centro, Millbrae, CA 94030, (415) 697-0567.

Epson Users of San Francisco Bay Area Epson group has nationally circulated newsletter Valnews: 400 members mostly QX-10 owners, growing software library. Meetings focus on mutual support. Mainly Valdocs and other applications. Meetings first Thursdays. 7 p.m. Fort Mason Center, Bldg. C, Room 205, San Francisco. Contact Alan Magary, 904 Irving St., Suite 271, San Francisco CA 94122, (415) 661-9270.

Napa Valley Epson Users Group 1307 Hestia Way, Napa, CA 94558, (707) 253-8727.

FORTH

FORTH Interest Group, Berkeley Chapter. Meets 2nd Saturday of the month at 1 pm, 10 Evans Hall, UC Berkeley. Contact Mike Perry, (415) 644-3421.

FORTH Interest Group, Monterey/Salinas Chapter. Contact Bud Devins, (408) 633-3253.

FORTH Interest Group, Sacramento Chapter. Meets 2nd Tuesday of the month, 7 pm, 170B 59th St., Room C. Contact Tom Ghormley (916) 444-7775.

FORTH Interest Group, Bay Area Chapter. Meets 4th Saturday of the month, 10 am advanced, 1 pm beginning, at ABC Christian School Auditorium, Dartmouth and San Carlos Ave., San Carlos (408) 277-0668.

FORTH Interest Group, Stockton chapter. Contact Doug Dillon (209) 931-2448.

GAVILAN

Gavilan User Group. Meets 2nd Thursday, 7 pm, Lockheed Bldg 162. Contact R.W. Brown, 780 Manx Ave., Campbell, CA, (408) 379-2774. Gavilan BBS (408) 374-3974, 300/1200, 24 hours, free.

HEATHKIT

San Jose Heathkit Users Group. Meets first Wednesday at 7 pm at the Heathkit store on South Bascom Ave. in Campbell.

B.A.H.U.G. Heath/Zenith computers, CP/M and MS-DOS. Meetings at 2001 Middlefield Rd., Redwood City, CA, 7 pm, 2nd Thursday. Contact John Lindquist, 642 Hollenbeck Ave. #1, Sunnyvale, CA 94087.

NBHZUG North Bay Heath/Zenith Users Group. Devoted to Heath/Zenith computers in specific and MS-DOS, CP/M computers in general. Beginners and advanced. Meeting place varies, time 2nd Saturday, noon. Contact Martin Schaaf, (415) 454-6761 for information.

HEWLETT-PACKARD

HP Portable People user group to be formed. Contact Michael Felsenstein, 2366 40th Ave., San Francisco, CA 94116, (415) 564-8279.

INTEREX is the International Association of Hewlett-Packard Computer Users, with affiliated users worldwide approaching 10,000. Acting as an information resource for users of HP computers (HP3000, 1000, 900 and Series 100), INTEREX maintains libraries of user contributed software. The software is available through the CSL membership categories. INTEREX has three publications, one or two for each of the categories. Phone (408) 738-4848 or write User Services Department, 680 Almanor Ave., Sunnyvale, CA 94086.

IBM

South County PC Users Group Meetings held second Thursday of each month at St. Clements School Library, 730 Calhoun St., Hayward. Public Domain and shareware disks, newsletter. Contact Bob McCloud (415) 537-9899.

Silicon Valley Computer Society. New users SIG, 7:30 pm, 2nd Wednesday; call Dick Meyer, (408) 723-0159. dBASE III SIG, 7:30 pm, 4th Thursday; call Thaine and Barbara Anderson, (415) 345-0152. WordPerfect SIG 7:30 pm, date variable; call Martin Van Derpool, (408) 238-8434. Software tools and graphics SIG, 7:30 pm, 4th Tuesdays; call Hal Sampson, (408) 866-7833. Artificial Intelligence SIG, 7:30 pm, 2nd Thursdays; call Kent Byron, (415) 656-0410. Telecom SIG, 7:30 pm, 1st Monday; call Scott Sawicki, (408) 243-8781. Lotus 1-2-3/Symphony SIG, 7:30 pm, 3rd Thursday; call Bill Welch, (408) 247-3405. C programming SIG, 7 pm, 3rd Tuesday; call Fletcher Johnson, (408) 946-0960.

California PC LAN Users Group, 1625 The Alameda, Suite 511, San Jose, CA 95126. (408) 289-1711.

Diablo Valley PC. An IBM PC User Group, monthly meetings, newsletter and public domain software library. Contact Jim McDonnel, president, 2261 North Main St. 117, Walnut Creek, CA 94596, (415) 933-1270.

The Bay Area Computer Society Emphasis on IBM PCs, networking and multi-user systems. P.O. Box 20583, Oakland, CA 94604, (415) 839-5786.

IBM PC Users Group of the Redwoods. Anyone interested in PCs and/or compatibles is welcome. Meetings at Yulupa School, 2250 Mesquite Dr., Santa Rosa, CA, 4th Thursday of the month, 7 pm. Contact Michael Adams, P.O. Box 5055. Santa Rosa, CA 95402, (707) 664-8320, (707) 546-3619.

Sacramento PC Users Group. Over 1000 members. Meetings at Holiday Inn Holidome, 5321 Date Ave., 7 pm, 3rd Wednesday. Contact Barney McCauley, P.O. Box 685, Citrus Heights, CA 95610, (916) 484-1048, or call the club number (916) 332-1944.

SF PC jr User Group meets monthly. Lectures and discussions on the usage of IBM PC jr software and hardware. Software and books library. For more information please send SASE to 2336 Market St., Suite 20, San Francisco, CA 94114. Meetings at 1550 Bay St., SF, every first Sunday at 7:30 pm.

San Francisco PC Users Group. Largest SF group focusing on IBM and compatibles. Over 150 disks of public domain software, excellent monthly newsletter. 800+ members, $30 yr. Write 3145 Geary Box 155, San Francisco, CA 94118. Meetings 8 pm, 3rd Mondays, Bldg A Fort Mason.

Monterey Bay PCjr Users Group. Meets at Legacy Computers, 431 Tyler, Monterey, CA 93940. Usually meets second Thursday of the month. Contact Lloyd Reece, (408) 899-5795. Mail to Box 1191, Seaside, CA 93955.

Valley PC Users Group. Individuals and corporate users of the IBM PC and compatibles; guest speakers from major vendors, public domain software, exchange problems and solutions. BBS 24 hours (209) 952-5021. Meeting address 731 Brookside Road, UOP School of Pharmacy, Rotunda Bldg., Stockton, 7 pm, 1st Tuesday. Contact Francis Pillow, P.O. Box 77748, Stockton, CA 95207, (209) 478-9697.

FUNHUG PC—Fremont, Union City, Newark, Hayward User Group. For recreational/home users of IBM PC and compatibles. We meet on the third Wednesday of each month at the Fremont Main Library, 39770 Paseo Padre, Fremont, CA at 7:30 pm. We have software/hardware demonstrations and visits from manufacturers. Our library contains over 350 disks of public domain software. There are no dues, beginners are always welcome. For more info and map send SASE to Russ Fisher, 36015 Pizarro Dr., Fremont, CA 94536.

Marin-Sonoma PC Users Group. Meets last Tuesday of the month, 7:30 pm, in the Whistlestop building, 930 Tamalpais St., San Rafael, CA. Park in Savings and Loan parking lot across the street. Classes, SIGs, 24 hour BBS at 415/927-1216. Emphasis on business applications and solutions. For additional information contact John Hawkins (415) 525-8500, P.O. Box 6476, San Rafael, CA 94903.

Santa Cruz Computer Society. An IBM PC and compatible for beginning to advanced users, programmers and decision makers. Meetings 3rd Thursday, 7 pm, 1555 Soquel Dr., Santa Cruz (Dominican Education Center). Call Daniel Payne, (408) 476-0203.

San Francisco Computer Society, a CP/M and MS-DOS user group, meets on the first Monday of each month, 7:00 pm, at Homestead Savings, 5757 Geary Blvd., San Francisco. Membership is free, meetings are free and open to members and non-members. Member of FOG. For more information call Ralph Gallagher at (415) 929-0252.

IBM Compatible User Group of Silicon Valley. Meets monthly to share information about IBM compatible or clone computers. BBS (408)287-8326, 300/1200, 5:30 pm-7:30 am M-F, 24 hours weekends. Call (408) 287-8325 for information, or write to 1515 The Alameda, Suite 303, San Jose, CA 95126.

CP/MUSC, A FOG affiliate, membership open to all persons interested in MS-DOS or CP/M computers. Meetings the second Tuesday of each month. Wheelchair access. Guest

speakers, demonstrations, MS-DOS and CP/M software libraries. Info: P.O. Box 628, Ben Lomond, CA 95005, (408) 338-6365, (408) 476-0504.

Berkeley P.C. Users Group. Meets on the 2nd Tuesday of each month, 7:00 pm, at 2618 Telegraph Avenue, Berkeley. For more info, contact Mel Mann, 1145 Walnut Street, Berkeley, CA 94707, (415) 527-2177 or Andy Wong, 2618 Telegraph Ave., Berkeley, CA (415) 845-4814.

IBM AT/XT Clone Users Group. Meets 2nd Monday of every month at Bldg. 'C' (usually room 215) Fort Mason Center in San Francisco. $25 annual membership includes newsletter. Group focuses on clone hardware and support. P.O. Box 15000/324, San Francisco, CA 94115. Voice: (415) 861-9321. BBS: (415) 552-9070.

Mid-Peninsula IBM PC Club. For IBM employees only. Contact George Halle (415) 855-3474 or Scott Maiden (415) 855-3038.

KAYPRO

BAKUP (Bay Area Kaypro Users and Programmers). One of largest Kaypro user groups in country. Meet 3rd Tuesday of month, 7:30 pm. We support our RBBS/RCPM for members, publish a monthly newsletter, have a 40 volume software library, and a lot of fellow KP'ers! Write for info, $10 per year to join: Membership Coordinator, P.O. Box 20181, Oakland, CA 94620.

KAYFUN Peninsula Kaypro Users Group meets second Thursday of every month at 7:30 pm in the ground floor social room, 222 Laurel St., San Carlos. Bimonthly newsletter, public domain software library, and publication library. Membership $12 per year. Every third meeting a Free Forum night dedicated to individual help. Contact Larry Welling, 222 Laurel St. #310, San Carlos, CA 94070, (415) 593-9981.

South Bay Kaypro Users Group (SBKUG). Meetings at 10400 Torre Ave., Cupertino. We have an extensive library of public domain software, including over 200 diskettes of the SIG/M library. The floor is open for questions at each meeting, and we welcome new members at all levels of ability. Bring your machine, or at least your diskettes. For meeting night call Chuck Hansen at (408) 257-5244, or write P.O. Box 390088, Mountain View, CA 94039-0088.

HAYPROS. Kaypro User's Group - informal format, dealer supported. Meets at Computer Insights, 40957 Grimmer Blvd., Fremont, CA 94538, 1st Tuesday each month. Contact Ted de Castro, 18841 Vineyard Rd., Castro Valley, CA, (415) 581-8882.

CP/MUSC, A FOG affiliate, membership open to all persons interested in MS-DOS or CP/M computers. Meetings the second Tuesday of each month. Wheelchair access. Guest speakers, demonstrations, MS-DOS and CP/M software libraries. Info: P.O. Box 628, Ben Lomond, CA 95005, (408) 338-6365, (408) 476-0504.

San Francisco Computer Society, a CP/M and MS-DOS user group, meets on the first Monday of each month, 7:00 pm, at Homestead Savings, 5757 Geary Blvd., San Francisco. Membership is free, meetings are free and open to members and non-members. Member of FOG. For more information call Ralph Gallagher at (415) 929-0252.

Silicon Valley FOG. Supporting all types of CP/M micros. Two meetings monthly, one at the Campbell Public Library, 70 North Central Ave., Campbell, and the other at the Saratoga Community Library, 13650 Saratoga Ave., on the southeast corner of Saratoga and Fruitvale Avenues, Saratoga. Call (408) 371-8699 for further information.

LEADING EDGE

Bay Area Leading Edge User Group. Interested in starting a Leading Edge User Group? Write to Jim Williams, 26765 Calaroga Ave., Hayward, CA 94545.

MACINTOSH

EBMUG (East Bay Macintosh User's Group) Friendly, informal. Public domain software and computer book library. Information exchange. Speakers. Product discounts. Free admission. Meets at West Berkeley Public Library, 1125 University Ave., Berkeley, CA, third Tuesday of each month at 7:30 pm. Contact Shep Tamler at P.O. Box 7816, Berkeley, CA 94707-0816.

Bay Area MacForum New and experienced Macintosh users. 2 monthly meetings, one in conjunction with San Francisco Apple Core, and one in Concord. For meeting and current events iiinformation call (415) 771-5830. Recorded message 24-hours, live person sometimes during business hours. Leave name and address to receive information.

Berkeley Macintosh User Group (BMUG). 1442A Walnut St., #153, Berkeley, CA 94709. Free meetings on campus (UCB). General meetings: every Thursday 6 pm, Physical Sciences Lecture Hall. Beginners: 6 pm Tuesdays, 230 Wheeler. Developers: 6 pm Wednesdays, 30 Wheeler. Call the office for this week's topic. Reese Jones, (415) 849-9114. BBS (415) 849-BMUG.

MacNexus. Sacramento's Macintosh User Group. 150 members, but still informal. Extensive public domain collection. Contact Gail McGovern, P.O. Box 163058, Sacramento, CA 95816, (916) 446-2411. Meetings 3rd Thursdays, 6:30 pm, Almond Plaza, 17th & C, Sacramento.

MacProgram Unlimited. Meets monthly. Informal with hands-on testing of different programs. Public domain and standard programs in rental library. Meets Albany YWCA, Kains and Solano, Saturday 9:30 am. Contact William Gong, P.O. Box 7704, Berkeley, CA 94707. (415) 527-1756.

Stanford Macintosh Users Group (SMUG) meets on the first Monday of the month at 7 pm in Kresge Auditorium, Stanford Campus. Meetings include speakers, discussions, answers and sale of library disks and other SMUG items. The Excel, Novice, Developer's, Japanese Word Processing Groups each meet twice monthly. SMUG publishes a newsletter and runs a BBS. Call the SMUG hotline at (415) 723-SMUK for a listing of current events. Stanford Macintosh Users Group, P.O. Box 2354, Stanford, CA 94305-0135.

Club Mac of Monterey. Macintosh User Group of Monterey Bay Area. Membership with monthly newsletter $25. Meetings 7 pm, last Wednesday of the month, Santa Catalina School, Monterey. Contact Richard Ware, P.O. Box 222988, Carmel, CA 93922.

Macs Of Marin. Macintosh users of Marin County. Both beginning and experienced users are welcome. Meetings: Room 104, Austin Science Building, College of Marin, 2nd Thursday of each month, 7:00 pm. Contact Steve Salzman, (415) 459-5707.

maCruzers, a Macintosh user's group, meets every second Wednesday of the month at Louden Nelson Recreation Center in Santa Cruz, 7 pm. For information call (408) 459-1644, or leave mail on The WELL (415-332-6106) for Paul Foraker [sforaker]. Wood Ring BBS (408) 423-7205, 18 hrs/day, several megs of shareware/pd utilities and games; making the effort to have the latest version of important DAs and utilities.

Association of Apple 32 Users. Meetings at GTE in Mountain View, 2nd Saturday of the month. Contact Ken Silverman, P.O. Box 634, Santa Clara, CA 95052, (408) 263-0398.

Bay Area Mac M.S. Basic Users Anonymous. B.A.M.M. S.B.U.A. Meets second Tuesday of each month, 7:00 pm, at Sanctuary of Noe Valley Ministry, 1021 Sanchez Street, San Francisco. First tentative meeting will feature utility program demonstration. Bring a disk and get a copy. Also: Show & Tell, Kvech, Help and Trash-The-Low-Level-Languages. For more info, contact Ted Jones, 4145 24th Street, San Francisco, CA 94114, (415) 826-9239.

Mac Health User Group. For DentalMac, Medimac and Chiromac users, and interested others. To discuss ways to better use these billing and accounts receivable programs and the Macintosh in healthcare practice. Meets at various times and locations. For more info, contact Robin Guess, 896 24th Avenue, San Francisco, CA 94121, (415) 387-3042.

Hellmans Open House. Meets every Tuesday 7 pm at 814 "E" St. San Rafael. Macintosh Network Games, Mazeware and Net-Trek, Bring your Mac and Appletalk cables if you have them. For more info call (415) 453-7924.

Silicon Valley Christian Mac Users Group. Meets 1st Thursday of each month at 7 pm at various locations. All Bay Area Christian Mac users invited. Informal, just getting started, monthly newsletter and hot lines. Contact Rick Thrasher 2190 Bristolwood Ln., San Jose, CA 95132. (408) 945-4946.

MICROMATE

East Bay Micro-Mate Users' Group. CP/M (3.0) public domain software available. Meetings at 757 Longridge Rd., Oakland, 1st Thursday of each month. Contact Ed Miler, P.O.B. 402, Moraga, CA, 94556, or call (415) 376-1611 for info.

MICROPRO

Wordstar Users. Forming user group for Wordstar users. Please write to P.O. Box 1331, Menlo Park, CA 94025 or call (415) 325-4277.

MIDI

MIDI Applications Group. Meets first Saturdays of the month. Contact John Komlenic, 1411 10th Ave., Oakland, CA 94606, (415) 465-6216.

MORROW

BAMDUA (Bay Area Micro Decision Users Association). Meets on last Tuesday of the month, 7:30 pm. Call (415) 644-2805 for location. Monthly newsletter.

SMUG (Stanford Morrow Users Group). Meets 2nd Wednesday of each month at 7 pm on Stanford Campus, Shultz Auditorium, Health Research and Policy building, Campus and Lomita Drive. Other CP/M users welcome. For further information call Ross E. Voyles, (408) 243-1455.

CP/MUSC, A FOG affiliate, membership open to all persons interested in MS-DOS or CP/M computers. Meetings the second Tuesday of each month. Wheelchair access. Guest speakers, demonstrations, MS-DOS and CP/M software libraries. Info: P.O. Box 628, Ben Lomond, CA 95005, (408) 338-6365, (408) 476-0504.

PETMUG — Petaluma Morrow Users Group. Meets Westamerica Bank, Washington Square, Petaluma, 7:30 pm, 4th Thursday of the month. Contact Frank Nance, president, 293 Circulo Puebla, Rohnert Park, CA, (707) 585-2980.

San Francisco Computer Society, a CP/M and MS-DOS user group, meets on the first Monday of each month, 7:00 pm, at Homestead Savings, 5757 Geary Blvd., San Francisco. Membership is free, meetings are free and open to members and non-members. Member of FOG. For more information call Ralph Gallagher at (415) 929-0252.

Silicon Valley FOG. Supporting all types of CP/M micros. Two meetings monthly, one at the Campbell Public Library, 70 North Central Ave., Campbell, and the other at the Saratoga Community Library, 13650 Saratoga Ave., on the southeast corner of Saratoga and Fruitvale Avenues, Saratoga. Call (408) 371-8699 for further information.

NORTHSTAR

INSUA Largest North Star users group in the world. Members' newsletter and software library. Membership dues $20. Contact George Riddle, P.O. Box 2910, Fairfield, CA 94533.

OSBORNE

East Bay FOG (First Osborne Group) Osborne, Kaypro and Morrow. Meets second Wednesday of the month at B&B Electric, 2832 Ford Street, Oakland. 6 pm workshops, 7:30 pm program. For info contact 5497 Taft Ave., Oakland, CA 94518; phone (415) 272-9099.

SMOG3 Osborne User Group (Peninsula) Meets first and second Monday of every month at Crane Place, 1331 Crane, Menlo Park. Call Phil Moore at (415) 325-2442.

MTDOG (Mt. Diablo Chapter-First Osborne Group) Meetings 7 pm, 3rd Wednesday each month in Diablo Room (top floor), SF Federal Savings and Loan, 1660 Olympic Blvd. (cross-street: California), Walnut Creek. Software library, software / hardware / service demonstrations, sharing problems and solutions. For meeting info contact Larry Sydes, (415) 933-2665.

North Bay First Osborne Group. Meets first Thursday of the month at 7:30 pm, Valley Oaks Apts. Rec. Hall, 2600 Northcoast St., Santa Rosa, CA (off West Steele Lane). Call (707) 546-0145 for more information.

CP/MUSC, A FOG affiliate, membership open to all persons interested in MS-DOS or CP/M computers. Meetings the second Tuesday of each month. Wheelchair access. Guest speakers, demonstrations, MS-DOS and CP/M software libraries. Info: P.O. Box 628, Ben Lomond, CA 95005, (408) 338-6365, (408) 476-0504.

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NEC

Bay Area NEC/100 Users. For NEC 8201A and TRS-80 Model 100. Meets College of Alameda, 1st and 3rd Thursdays, 7:30 pm. Contact Rachel Holmen, c/o Truly Portable, Box 2916, Oakland, CA 94609, (415) 658-1889. Call for room number, which changes occasionally.

PAPERBACK SOFTWARE

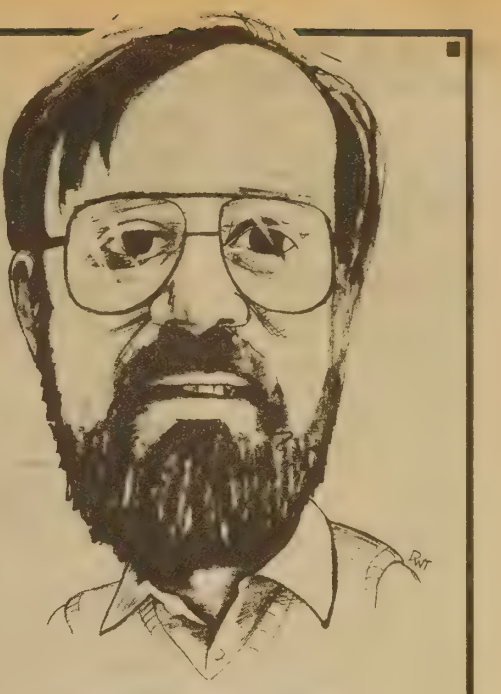
V-P Planner Special Interest Group. Meets 2830 Ninth St., Berkeley, CA, every third Thursday, 7:30 pm. Contact Lloyd W. Bracewell, 6200 Harwood Ave., Oakland, CA 94618, (415) 547-8205.

PICK

Northern California Pick Users. NCPU mails a monthly newsletter, meets on the third Tuesday of the month for a dinner meeting with Pick related program, holds Pick educational courses, and has many other member benefits. P.O. Box 884474, San Francisco, CA 94188-4474, (415) 284-4063.

PIED PIPER

Pied Piper Users Group Owners of Pied Piper CP/M based computer are invited to call or attend the PPUG. Meets last Tuesday of the month at 7:30 pm. Please call (415) 638-1146. Meeting address: 10950 Elvessa St., Oakland 94605.



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